

Le Bourgeois de Fontenelle / B
A K
Week's Conversation
ON THE
PLURALITY
OF
WORLDS.

By Monsieur FONTENELLE.

*Translated from the last PARIS Edition, wherein
are many IMPROVEMENTS throughout; and
some NEW OBSERVATIONS on several
DISCOVERIES which have been lately made
in the HEAVENS.*

By WILLIAM GARDINER, Esq,

THE SECOND EDITION.

To which is added,

Mr. Secretary ADDISON'S
ORATION, made at Oxford,
in Defense of the New Philosophy.

L O N D O N

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P R E F A C E.



AM pretty much in the CASE of CICERO, when he undertook to write of Philosophy in his own Tongue, there being, then, no Books upon that Subject, but what were wrote in Greek: He was told, as he informed Us, that he would take Pains to no Purpose; because, such as were Admirers of Philosophy, would make use of Greek Authors, and not read Latin ones, which treated of it, but at second-hand; and those who had no such Relish for this Science, would never trouble their Heads with either Greek or Latin.

CICERO replied, it might happen quite otherwise; for, *says he*, the great Ease People will find in reading *Latin Books*, will tempt those to be Philosophers who are none; and they who already are Philosophers, by reading *Greek Books*, will be very glad to see how the Subject is handled in *Latin*.

CICERO might with good Reason answer as he did, because the Excellency of his Genius, and the great Reputation he had acquired, warranted the Success of all he wrote: But in a Design, not much unlike his, I am far from having those Grounds of Confidence which he had. My purpose is to Discourse of Philosophy, but not directly in a Philosophical Manner; and to raise it to such a Pitch, that it shall not be too dry and insipid a Subject to please Gentlemen; nor too mean and trifling to entertain Scholars. Should I be told (as Cicero was) that such a Discourse as this, would not please the Learned, because it cannot teach Them any thing;
nor

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nor the Illiterate, because they will have no mind to learn; I will not answer as he did: It may be, endeavouring to please every Body, I have pleased no Body; now, to keep a Medium betwixt two Extrems, is so very difficult, that, I believe, I shall never desire to put my self a Second Time to the like Troubles.

If I should acquaint Those who are to read this Book, and have any Knowledge of Natural Philosophy, that I do not pretend to Instruct, but only to Divert them; by presenting to their View in a gay and pleasing Dress, what they have already seen in a more grave and solid Habit: Not but They, to whom the Subject is New, may be both Diverted and Instructed: The first will act contrary to my Intention, if they look for Profit, and the last, if they seek for nothing but Pleasure.

I have chosen that Part of Philosophy which is most likely to excite Curiosity; for I think nothing concerns us more,
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than

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than to Enquire how this World, which we inhabit, is made; and whether there be any other Worlds like it, which are also Inhabited as This is? But after all, it is at every Body's Discretion, how far they will run their Disquisitions: Those who have any Thoughts to lose, may throw them away upon such Subjects as these; but, I suppose such as can employ their Time better, will not be at so vain and fruitless an Expence.

In these Discourses, I have introduced a LADY, to be instructed in Things of which she never heard; and I have made use of this Fiction, to render the Book the more acceptable, and to give Encouragement to Gentlewomen, by the Example of one of their own Sex, who without any Supernatural Parts, or Tincture of Learning, understands what is said to her; and without any Confusion, rightly apprehends what Vortexes and other Worlds are: And why may not there be a Woman like this imaginary Countess, since her Conceptions are

no

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no other than such as she could not chuse but have?

To penetrate into things either obscure in themselves, or but darkly expressed, requires deep Meditation, and an earnest Application of the Mind; but here, nothing more is requisite than to Read, and to imprint an Idea of what is read, in the Fancy, which will certainly be clear enough. I shall desire no more of the Fair Sex, than that they will peruse this System of Philosophy, with the same Application that they do a Romance or Novel when they would retain the Plot, or find out all its Beauties. It is true, that the Ideas of this are less familiar to most Ladies, than those of Romances, but they are not more obscure; for at most, twice or thrice thinking, will render them very perspicuous.

I have not composed an Airy System, which has no Foundation at all: I have made use of some true Philosophical Arguments, and of as many as I thought necessary;

necessary; but it falls out very luckily in this Subject, that the Physical-Ideas are in themselves very diverting; and as they convince and satisfy Reason, so at the same Time they present to the Imagination a 'Prospect' which looks as if it were made on purpose to please It.

When I meet with any Fragments which are not of this kind, I put them into some pretty strange dress; Virgil has done the like in his Georgicks, when his Subject is very dry, he adorns it with pleasant Digressions: Ovid has done the same in his Art of Love, and though his Subject be of it self very pleasing, yet he thought it tedious to talk of nothing but Love. My Subject has more need of Digressions than his, yet I have made use of them very sparingly, and of such only, as the natural Liberty of Conversation allows: I have placed them only where I thought my Readers would be pleased to meet with them; the greatest part of them are in the Beginning of the Book, because the Mind cannot

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not at first be so well acquainted with the Principal Ideas which are presented to it; and, in a Word, they are taken from the Subject it self, or, are as near to it, as is possible.

I have related nothing concerning the Inhabitants of the several Worlds, which may seem Fabulous, or Chimerical; but have said whatever may be reasonably thought of them; and the Visions which I have added, have some real Foundation; what is true, and what is false are mingled together, but so as to be easily distinguished: I will not undertake to justify so fantastical and odd a Composition, which is the principal Point of the Work, and yet, for which, I can give no very good Reason.

There remains no more to be said in this Place, to a sort of People, who perhaps will not be easily satisfied, though I have good Reasons to give them; but, that the best which can be given will not satisfy them. These are the scrupulous

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pulous Persons, who imagine, that the placing Inhabitants any where, but upon the Earth, will prove dangerous to Religion : I know how excessively tender some are in religious Matters, and therefore I am very unwilling to give any Offence, in what I publish, to People whose Opinion is contrary to that I maintain : But Religion can receive no Prejudice by my System, which fills an Infinity of Worlds with Inhabitants, if a little Error of the Imagination be but rectified. When it is said the Moon is inhabited, some presently fancy that there are such Men there, as our selves ; and Priests without any more a-do, think him an Atheist, who is of that Opinion. None of Adam's Posterity, cry they, ever travelled so far as the Moon ; nor were any Colonies ever planted in that Region. I grant it. The Men in the Moon are not the Sons of Adam : And here again Theology would be puzzled, if there should be Men any where, who never descended from him. To say no more, this is the great Difficulty to which all others

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others may be reduced: To clear it by a larger Explanation, I must make use of Terms which deserve greater Respect, than to put into a Treatise, so far from being serious as this is. But perhaps there is no need of Answering the Objection, for it concerns no Body but the Men in the Moon; and I never yet affirmed there are Men there; if any ask what the Inhabitants are, if they be not Men? All I can say is, that I never saw them; and it is not because I have seen them, that I speak of them: Let none however think, that I say there are no Men in the Moon, purposely to avoid the Objection made against me; for it appears it is impossible there should be any Men there, according to the Idea I have framed of that infinite Diversity and Variety, which is to be observed in the Works of Nature; this Idea runs through the whole Book, and cannot be contradicted by any Philosopher: Nay, I believe, I shall only hear this Objection started by such as shall speak of these Discourses, without having read them.

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them. But is this a Point to be depended on? No, on the contrary, I should more probably fear, that the Objection might be made to me from many Passages.

The Reader will find in this Edition, besides many Improvements interspersed in the Body of the Work, one New Conversation, in which I have put together those Reasonings, which I had omitted in the foregoing ones; and have subjoined some Late Discoveries in the Firmament, several of which have never yet been made Publick.

FONTENELLE.





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A

Week's Conversation

ON THE

PLURALITY OF WORLDS,

To Monsieur R * * *



O give you, *Sir*, a particular
Detail how I passed my
Time at the Countess of
D * * * 's Country Seat,
would make a large Volume;
and what is yet worse, a Volume of
Philosophy: Whereas the Entertain-
ments you expect are of another
kind, *viz. Dancing, Gaming, Hunting*;
instead of which you must take up with
B *Vortexes*,

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Vortexes, Planets, and New Worlds; these were the Subject of our Conversation. Now, as good Luck would have it, you are a Philosopher, so that it will be no great Disappointment; nay, I fancy, you'll be pleased, that I have brought over the Countess to our Party; we could not have gained a more considerable Person, for Youth and Beauty are ever inestimable: If *Wisdom* would appear with Success to Mankind, think you she could do it more effectually than in the Person of the Countess? And yet was her Company but half so agreeable, I am persuaded all the World would run mad after *Wisdom*. But, tho' I tell you all the Discourse I had with the Lady, you must not expect Miracles from me. It is impossible, without her Wit, to express her Sentiments, in the same manner she delivered them: For my part, I think her very Learned, from the great Disposition she has to Learning. It is not poring upon Books that makes a Man a Scholar. I know many who have
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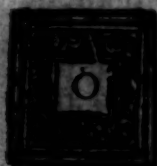
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done nothing else, and yet I fancy are not one tittle the wiser: But, perhaps you expect, before I enter upon my Subject, I should describe the Situation, and Building of the Countess's Seat; many great Palaces have been turned inside outward upon far less Occasion: But, I intend to save you and my self that labour; let it suffice, that I tell you, I found no Company with the Lady; this I was not at all displeased at; the first two Days drained me of all the News I brought from *Paris*; what I now send you is the rest of our Conversation, which I will divide into so many Parts, as we were Evenings together.



The First Evening's CONVERSATION.

*That the Earth is a Planet, which turns
on it self, and round the Sun.*



NE Evening, after Supper, we went to take a turn in the Park; the Air, from the Heat of the preceding Day, was extremely refreshing; the Moon was about an Hour high, and her Lustre, between the Trees, made an agreeable mixture of Light and Shade; the Stars were arrayed in all their Glory, and not a Cloud appeared throughout the Azure Sky; I was musing on this awful Prospect—but who can think long of the Moon or Stars in the Company of a pretty Woman? I am much mistaken if that is a Time for Contemplation: Well Madam, says I, to the Countess.

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ress, is not the Night as pleasant as the Day? The Day, *replied she*, like a fair Beauty, is clear and dazling; but the Night, like a brown Beauty, more soft and moving. You are Generous, Madam, *answerd I*, to prefer the Brown, who have all the Charms that belong to the Fair: But, is there any Thing more Beautiful in Nature than the Day? The Heroines of Romances are generally Fair; and that Beauty must be perfect, which has all the Advantages of Imagination. Tell me not, *says she*, of perfect Beauty, nothing can be so that is not moving. But since you talk of Romances, why do Lovers in their Songs and Elegies address themselves to the Night? 'Tis the Night, Madam, *replied I*, that crowns their Joys, and therefore deserves their thanks. But 'tis the Night, *answered she*, that hears their Complaints, and how comes it to pass, the Day is so little trusted with their Secrets? I confess, Madam, *says I*, the Night has somewhat a more melancholy Air than the Day; we fan-

cy the *Stars* march more silently than the *Sun*; and our Thoughts wander with the more Liberty, whilst we think all the World at rest but our selves: Besides, the Day is more uniform; we see nothing but the Sun, and one Light in the Firmament; whilst the Night shews us variety of Objects, and gives us ten Thousand Stars, which inspire us with as many pleasant Ideas. *She replied*, what you say is true, I love the *Stars*; there is somewhat charming in them, I could almost be angry with the *Sun* for effacing 'em. And I can't, *says I*, pardon him, for keeping all those *Worlds* from my sight: What *Worlds*, *says she*, looking earnestly upon me, do you mean?

I beg your Pardon, Madam, *replied I*, you have put me upon my Folly, and I begin to rave: What Folly, *answered she*, I discover none? Alas, *says I*, I am ashamed, I must own it, I have had a strong Fancy that every *Star* is a *World*: I will not swear that it is true, but must think so, because it is so pleasant to believe

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lieve it ; 'tis a Fancy come into my Head, which is very diverting. If your Folly be so diverting, *says the Countess*, pray make me sensible of it ; provided the Pleasure be so great, I will believe as much of the *Stars* as you would have me. I fear Madam, *replied I*, 'tis a Diversion you won't relish, 'tis not like reading one of *Moliere's* Plays ; 'tis a Pleasure rather of the *Fancy* than of the *Judgment*. I hope, *answered she*, you do not think me incapable of it ; teach me your *Stars*, I will shew you the contrary. No, no, *says I*, it shall never be said I was talking *Philosophy* at Ten a-Clock at Night, to the most amiable Creature in the Universe ; find your *Philosophers* somewhere else.

But vain were my Excuses ; who could resist such Charms ? I was forced to yield, and yet I knew not where to begin ; for to a Person who understood nothing of *Natural Philosophy*, you must go a great way about to prove that the *Earth* may be a *Planet* ; the *Planets* so many *Earths* ; and all the

Stars distinct Worlds; however, to give her a general Notion of *Philosophy*, at last I resolved on this Method. Madam, *says I*, all *Philosophy* is founded upon these two Propositions. 1. *That, we are too short sighted*; or, 2. *That, we are too curious*; for, if our Eyes were better than they are, we should soon see whether the *Stars* were *Worlds* or not; and if on the other side we were less curious, we should not care whether the *Stars* are *Worlds* or not, which I think is much to the same Purpose. But the Business is, we have a mind to know more than we see: And again, if we could discern well what we do see, it would be too much known to us; but we see Things quite otherwise than they are. So that your true Philosopher will not believe what he does see, and is always conjecturing at what he doth not; which I think is a Life not much to be envied: Upon this I fancy to my self, that *Nature* very much resembles an *Opera*: where you stand, you do not see the *Stage* as it really is; but as 'tis placed

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placed with Advantage, and all the Wheels and Movements hid, to make the Representation the more agreeable: Nor do you trouble your self how, or by what Means the Machines are moved, tho' certainly an Engineer in the Pit is affected with what does not touch you; he is pleased with the Motion, and is demonstrating to himself on what it depends, and how it comes to pass. This Engineer is like a Philosopher, tho' the Difficulty be greater on the Philosopher's part, the Machines of the Theatre being not near so curious as those of Nature, which disposes her Wheels and Springs so much out of sight, that we have been a long while guessing at the Movement of the Universe. Let us imagine, some of the ancient Sages to be at an Opera, such as *Pythagoras*, *Plato*, or *Aristotle*, and all the Wise Men who have made such a Noise in the World, for these many Ages: We will suppose 'em at the Representation of *PHAETON*, where they see the aspiring Youth lifted up by the

B 5 Winds,

Winds, but do not discover the Wires by which he mounts, nor know they any Thing of what is done behind the Scenes. Would you have all these Philosophers own themselves to be stark Fools, and confess ingenuously they don't know how it comes to pass: No, no, they are not called *Wise Men* for nothing; tho', let me tell you, most of their Wisdom depends upon the Ignorance of their Neighbours. Every Man presently gives his Opinion, and how improbable soever, there are Fools enough of all sorts to believe 'em: One tells you *Phaeton* is drawn up by a hidden Magnetick Vertue, no matter where it lies; and perhaps the grave Gentleman will take Pet, if you ask him the Question. Another says, *Phaeton* is composed of certain Numbers that make him mount; and after all, the Philosopher knows no more of those Numbers than a fucking Child does of *Algebra*: A third tells you, *Phaeton* has a secret love for the Top of the Theatre, and like a true Lover, cannot

not be at rest out of his Mistress's Company, with an hundred such extravagant Fancies, that a Man must conclude the Old Sages were very good Banterers: But now comes Monsieur *Descartes*, with some of the Moderns, and they tell you PHAETON ascends, because a greater Weight than he descends; so that now we do not believe a Body can move without it is pushed and forced by another Body, and, as it were, drawn by Cords, so that nothing can rise or fall, but by the Means of a Counterpoise; to see Nature then, as she really is, one must stand behind the Scenes at the Opera. I perceive, *says the Countess*, Philosophy is now become very Mechanical. *Yes, Madam, replied I*, so Mechanical, that I fear we shall quickly be ashamed of it; they will have the World to be in Large, what a Watch is in Small; which is very regular, and depends only upon the just disposing of the several Parts of the Movement. But pray tell me, Madam, had you not formerly a more

sublime Idea of the Universe? Do not you think you then honoured it more than it deserved? For most People have the less Esteem for it since they have pretended to know it. I am not of their Opinion, *says she*, I value it the more since I know it resembles a Watch; and the more plain and easy the whole Order of Nature seems to be, to me it appears the more admirable.

I do not know, *answered I*, who has inspired you with these solid Notions, but I am certain there are but few who have them besides your self; People generally admire what they do not comprehend; they have a Veneration for Obscurity, and look upon Nature, as a kind of Magick, while they do not understand her, and despise her below Le-gerdemain, when once they are acquainted with her; but I find you, Madam, so much better disposed, that I have nothing to do but to draw the Curtain, and shew you the World. That then which appears farthest from the Earth, (where we reside) is called
the

the *Heavens*, that Azure Firmament where the Stars are fastned like so many Nails, (and are called fixed, because they seem to have no other Motion than that of their Heaven, which carries them with it self from East to West.) Between the Earth and this great Vault (as I may call it) hang at different Heights the *Sun*, and the *Moon*, with the other five Stars, *Mercury*, *Venus*, *Mars*, *Jupiter* and *Saturn*, which we call the Planets, not being fastned to the same Heaven, and having very unequal Motions, have divers Aspects and Positions: Whereas the fixed Stars in respect to one another, are always in the same Situation: For Example, *Charles's Wain*, which is composed of those seven Stars, has been and ever will be as it now is, tho' the *Moon* is sometimes nearer to the *Sun*, and sometimes farther from it; and so it is with the rest of the Planets. Thus things appeared to the old *Chaldean* Shepherds, whose great Leisure produced these first Observations, which have since been the Foundation of Astronomy;

nomny; which Science had its Birth in *Chaldea*, as Geometry sprung from *Egypt*, where the Inundation of the *Nile* confounding the Bounds of the Fields, occasioned their inventing more exact Measures to distinguish every one's Land from that of his Neighbour. So that *Astronomy* was the Daughter of *Idleness*, *Geometry* the Daughter of *Interest*; and if we did but examine *Poetry*, we should certainly find her the Daughter of *Love*.

I am glad, says the Lady, I have learnt the *Genealogy* of the *Sciences*, and am convinced I must stick to *Astronomy*, my Soul is not mercenary enough for Geometry, nor is it tender enough for Poetry; but I have as much Time to spare as Astronomy requires; besides we are now in the Country, and lead a kind of Pastoral Life, all which suits best with Astronomy. Do not deceive your self, Madam, replied I, 'tis a true Shepherd's Life to talk of the Stars and Planets: See if they pass their Time so in *Astraea*. That sort of Shepherd's Craft,

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Craft, *answered she*, is too dangerous for me to learn; I love the honest *Chaldeans*, and you must teach me their Rules, if you'd have me improve in their Science. But let us proceed; When they had ranked the Heavens in the Manner you tell me, pray, what is the next Question? The next, *says I*, is the disposing the several Parts of the Universe, which the Learned call, *making a System*; but before I expound the first System, I would have you observe, we are all naturally like the Madman at *Athens*, who fancied all the Ships that came into the *Pyræum* Port, belonged to him: Nor is our Folly less extravagant, we believe all things in Nature designed for our Use; and do but ask a Philosopher, to what Purpose there is that prodigious company of fix'd Stars, when a far less Number would perform the Service they do us? He answers coldly, they were made to please our Sight. Upon this Principle they imagined the Earth rested in the Center of the Universe, while all the Celestial
Bodies

Bodies (which were made for it) took the Pains to turn round to give Light to it. They placed the *Moon* above the *Earth*, *Mercury* above the *Moon*, after *Venus*, the *Sun*, *Mars*, *Jupiter*, *Saturn*; above all these they set the Heaven of fixed Stars, the *Earth* was just in the Middle of those Circles which contain the Planets, and the greater the Circles were, they were the farther distant from the *Earth*, and by consequence the farthest Planets took up the most Time in finishing their Course; which in effect is true: But why, says the Countess (interrupting me) do you dislike this *System*: It seems to me very clear and intelligible. However, replied I, Madam, I will make it plainer; for should I give it you as it came from *Ptolemy* its Author, or some others who have since studied it, I should frighten you, I fancy, instead of diverting you. Since the Motions of the Planets are not so regular, but that sometimes they go faster, sometimes slower, sometimes are nearer the *Earth*, and sometimes farther

farther from it; the Ancients invented I do not know how many Orbs or Circles, involved one within another, which they thought would salve all Objections; this Confusion of Circles was so great, that, at that Time, when they knew no better, a certain King of *Aragon*, a great Mathematician, (but not much troubled with Religion,) said, *That had God consulted him when he made the World, he would have told him how to have framed it better.* The Saying was very Atheistical, and no doubt the Instructions he would have given the Almighty, was the Suppressing those Circles with which they had clogged the Celestial Motions, and the taking away two or three superfluous Heavens, which they placed above the fixed Stars; for these Philosophers, to explain the Motion of the Celestial Bodies, had above the uppermost Heaven (which we see) found another of Crystal, to influence and give Motion to the inferiour Heavens; and wherever they heard of another Motion, they presently clapped up a Crystal Heaven

Heaven which cost them nothing. But why, *says the Countess*, must their Heaven be of Crystal, would nothing else serve as well? No, no, *replied I*, nothing so well; for the Light was to come through them, and yet they were to be solid. *Aristotle* would have it so, he had found Solidity to be one of their Excellencies, and when he had once said it, no Body would be so rude as to question it. But it seems there were Comets much higher than the Philosophers expected, which as they passed along broke the Crystal Heavens, and confounded the Universe. But to make the best of a bad Market, they presently melted down their broken Glafs, and to *Aristotle's* Confusion, made the Heavens fluid; and by the Observations of these latter Ages, it is now out of doubt, that *Venus* and *Mercury* turn round the *Sun*, and not round the *Earth*, according to the Ancient System, which is now every where exploded, and all the Authorities not worth a Rush. But that which I am going to lay down, will
salve

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salve all, and is so clear, that the King of *Aragon* himself may spare his Advice. Methinks, *answered the Countess*, your Philosophy is a kind of Out-cry, where he that offers to do the Work cheapest, carries it from all the rest. This, *says I*, is very true, Nature is a great Hufwife, she always makes use of what costs least, let the Difference be ever so inconsiderable; and yet this Frugality is accompanied with an extraordinary Magnificence, which shines through all her Works; that is, she is Magnificent in the Design, but Frugal in the Execution; and what can be more Praise-worthy, than a great Design accomplished with a little Expence? But in our Ideas we turn Things topsy-turvy, we place our thrift in the Design, and are at ten times more Charge in Workmanship than it requires; which is very ridiculous. Imitate Nature then, *replied she*, in your System, and give me as little trouble as you can to comprehend you. Madam, *says I*, fear it not, we have done with our Impertinences: Imagine then a German

man called COPERNICUS confounding every Thing, tearing in Pieces the beloved Circles of Antiquity, and shattering their Crystal Heavens like so many Glass Windows; seized with the noble Rage of Astronomy, he snatches up the *Earth* from the Center of the Universe, sends her packing, and places the *Sun* in the Center, to which it did more justly belong; the *Planets* no longer turn round the *Earth*, nor inclose it in the Circles they describe; if they give us Light, it is but by chance, and as they meet us in their way: All now goes round the *Sun*, even the *Earth* herself; and *Copernicus* to punish the *Earth* for her former Laziness, makes her contribute all he can to the Motion of the Planets and Heavens; and now, stripped of all the Heavenly Equipage with which she was so gloriously attended, she has nothing left her but the *Moon*, which still turns round about her: Fair and softly, says the Countess, I fancy you your self are seized with the Noble Fury of *Astronomy*; a little less Rap-
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ture, and I shall understand you better. The *Sun* you affirm is in the Center of the Universe, and is immoveable; *Mercury*, says I, follows next, he turns round the Sun, so that the Sun is in the Center of the Circle wherein *Mercury* moves; above *Mercury* is *Venus*, who turns all round the Sun; after, comes the Earth, which being placed higher than *Mercury* and *Venus*, makes a greater Circle round the Sun than either of them; at last comes *Mars*, *Jupiter* and *Saturn*, in the same Order I name them, so that *Saturn* has the greatest Circle round the Sun, which is the Reason he is longer in making his Revolution than any of the other Planets. You have forgot the *Moon*, says the Countess, we shall quickly find her again, replied I; the *Moon* turns round the Earth, and does not leave her, but as the Earth advances in the Circle, which she describes about the Sun; and if the *Moon* turns round the Sun, it is because she won't quit the Earth; I understand you, answered she, and I love the *Moon* for staying

staying with us when all the other Planets abandon us; nay, I fear your *German* would have willingly taken her away too if he could; for in all his Proceedings, I find he had a great spite to the Earth. It was well done of him, says I, to abate the Vanity of Mankind, who had taken up the best Place in the Universe, and it pleases me to see the Earth in the Crouds of the Planets. Sure, *answered she*, you do not think their Vanity extends it self so far as Astronomy! Do you believe you have humbled me, in telling me the *Earth* goes round the *Sun*? For my part I do not think my self the worse for it. I confess, Madam, *replied I*, it is my belief, that a fair Lady would be much more concerned for her Place at a Ball, than for her Rank in the Universe; and the Precedence of two Planets will not make half such a Noise in the World, as that of two Ambassadors; however, the same Inclination which reigns at a Ceremony, governs in a System; and if you love the uppermost Place

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Place in the one, the Philosopher desires the Center in the other; he flatters himself that all Things were made for him, and insensibly believes a Matter of pure Speculation to be a Point of Interest. This a Calumny, *says she*, you have invented against Mankind; why did they receive this System if it was so erroneous? I know not, *answered I*, but I am sure *Copernicus* himself distrusted the Success of his Opinion; it was a long time before he would venture to publish it; nor had he done it then, without the Importunity of his Friends. But do you know what became of him? The very Day they brought him the first printed Sheet of his Book, he dyed; foreseeing that he should never be able to reconcile all the Contradictions, and therefore very wisely slipped out of the way. I would be Just to all the World, *says the Countess*; but it is hard to fancy we move, and yet find we do not change our Place; we perceive our selves in the Morning where we lay down at Night: Perhaps

haps you will tell me the whole Earth moves— Yes, certainly, *adds I*; it is the same Case as if you fell asleep in a Boat upon the River, when you wake you find your self in the same Place, and the same Situation, in respect to all the Parts of the Boat. It is true, *replied she*, but here is a great Difference, when I wake I find another Shore, and that shows me, my Boat has changed its Place. But it is not the same with the Earth, I find all Things as I left them. No, no, *says I*, there is another Shore too; You know that beyond the Circles of the *Planets* are *fixed Stars*, there is our Shore, I am upon the *Earth*, and the *Earth* makes a great Circle round the *Sun*; I look for the Center of the Circle and see the *Sun* there, then I direct my sight beyond the *Sun* in a right Line, and should certainly discover the *fixed Stars* which answer to the *Sun*, but that the Light of the *Sun* effaces them: But at Night I easily perceive the *Stars* that corresponded with *him* in the Day, which is exactly

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exactly the same Thing; if the *Earth* did not change its place in the Circle where it is, I should see the *Sun* always against the same *fixed Stars*; but when the *Earth* changes its place, the *Sun* must answer to *other Stars*, and there again is your Shore, which is always changing. And seeing the *Earth* makes her Circle in a Year, I see the *Sun* likewise in the space of a Year answer successively to the whole Circle of the *fixed Stars*, which Circle is called the *Zodiack*: I'll draw you the Figure of it, if you please, on the Sand? 'Tis no matter, replied the Countess, I can do well enough without it; besides it will give an Air of Learning to my Park which I would not have in it: For I've heard of a certain Philosopher, who being Shipwrecked, and cast upon an unknown Island, seeing several Mathematical Figures traced on the Sea-shore, cryed out to those who followed him, *Courage, Courage, my Companions, the Isle is inhabited, behold the Footsteps of Men.*

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But you may spare your Figures, such Footsteps are not decent here.

I confess, Madam, *added I*, the Footsteps of Lovers would better become this Place; that is, your Name and Cypher cut on the Trees by your Adorers. Tell me not, *says she*, of Lovers and Adorers, I am for my beloved *Sun* and *Planets*. But how comes it to pass that the *Sun* as to the fixed Stars, compleats his Course but in a Year, and yet goes over our Heads every Day? Did you never, *replied I*, observe a Bowl on the Green? It runs towards the Block, and at the same time turns very often round itself, so that the parts which were above are below, and those which were below are above; just so it is with the *Earth*, at the same time that she advances on the Circle, which in a Year's space she makes round the *Sun*, in twenty-four Hours she turns *round her self*; so that in twenty-four Hours every Part of the *Earth* loses the *Sun*, and recovers him again, and as it turns towards the *Sun*, it seems to rise, and as it turns from him,

him, it seems to fall. 'Tis very pleasant, *says she*, that the *Earth* must take all upon her self, and the *Sun* do nothing: And when the *Moon*, the other *Planets*, and the *fixed Stars* seem to go over our Heads every twenty-four Hours, you'll say, That too is only Fancy? Mere Fancy, Madam, which proceeds from the same Cause; for the *Planets* compleat their Courses round the *Sun* at unequal times, according to their unequal Distances; and That which to Day we see answer to a certain Point in the *Zodiack*, or *Circle* of the fixed Stars, to Morrow will answer to another Point, because it is advanced on its own Circle, as well as we are advanced upon ours: We move, and the *Planets* move too, but with more or less Rapidity than we do; this puts us in different Points of Sight in respect to them, and makes us think their Courses irregular; but there is no Occasion of discoursing to you on that Head; 'tis sufficient to inform you, that what seems irregular in the *Planets*, proceeds only from our Motion,

Motion, when in Truth they are all very regular. I will suppose them so, *says the Countess*, but I would not have their Regularity put the *Earth* to so great Trouble; methinks you exact too much Activity from so ponderous a Mass. But, *says I*, had you rather that the Sun and all the Stars, which are vast great Bodies, should in twenty four Hours make a prodigious Tour round the Earth; and that the fixed Stars which are in a Circle of infinite Extent, whose Movement is always extreme, should run in a Day, three hundred Millions of Leagues, and go farther than from hence to *China* in the Time that you could say, *Away, quick to China*, as they needs must, if the *Earth* did not turn round it self every twenty four Hours? To say the Truth, it is much more reasonable to think that the should make the Tour, which at most is not above nine thousand Leagues; you perceive plainly, that to set nine thousand Leagues against three Hundred Millions, is no trifling Difference.

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rence. Oh, *says she*, the *Sun* and the *Stars* are all Fire, their Motion is not very difficult; but the *Earth*, I fancy, is a little unweildy. That, *replied I*, signifies nothing; for what think you of a First Rate Ship, which carries above 100 Guns, and near 1000 Men, besides her Provisions and other Furniture? One Puff of Wind you see sets Her a sailing, because the Water is liquid, and being easily separated, very little resists the Motion of the Ship; or if she lie in the Middle of a River, she will without Difficulty drive with the Stream, because there is nothing to oppose her Course. So the *Earth*, tho' never so weighty, is as easily borne up by the Celestial Matter, which is a thousand times more fluid than the Water, and fills all that great space where the Planets float; for how else would you have the Earth fastned to resist the Motion of the Celestial Matter, and not be driven by it? You may as well fancy a little Block of Wood can withstand the Current of a River. But

pray, *says she*, how can the Earth with all its Weight be borne up by your Celestial Matter, which must be very light, because it is so fluid? It does not argue, *answered I*, that what is most fluid, is most light: For what think you of the great Vessel I mentioned just now, which with all its Burthen is yet lighter than the Water it floats on? I'll have nothing to do with the great Vessel, *says she*, with some Warmth, and I begin to apprehend my Self in some Danger upon such a Whirlegig as you have made of the Earth. There is no Danger, *replied I*; but, Madam, if your Fears increase, we will have the Earth supported by four Elephants, as the *Indians* believe it. Hey Day, *crys she*, here is another System; however I love those People for taking care of themselves, they have a good Foundation to trust to, while we *Copernicans* are a little too venturous with the Celestial Matter; and yet I fancy if the *Indians* thought the *Earth* in the least danger of sinking, they would double their Number of Elephants.

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They do well, *says I*, laughing at her Fancy; who would sleep in Fear? And if you have occasion for them to Night, we will put as many as you please in our System, we can take them away again by Degrees, as you grow better confirmed. I don't think 'em very necessary, *replied she*, I have Courage enough to turn. You shall turn with Pleasure, Madam, *says I*, and shall find delightful Ideas in this System. For Example, sometimes I fancy my self suspended in the Air, without any Motion, while the Earth turns round me in twenty-four Hours; I see I know not how many different Faces pass under me, some White, some Black, and some Tauny; sometimes I see Hats, and sometimes Turbants; now Heads with Hair, and then shaved Pates; here I see Cities with Steeples, some with Spires and Crescents, others with Towers of *Porcelain*; and, anon, great Countries with nothing but Huts; here I see vast Oceans, and there most horrible Desarts; in short, I dis-

cover the infinite Variety which is upon the Surface of the Earth.

I confess, *says she*, 24 Hours would thus be very well bestowed, so that in the Place where we are now, I do not mean in the *Park*, but we will suppose our selves in the Air, other People continually pass by who take up our Place, and at the End of twenty four Hours we return to it again.

Copernicus himself, *answered I*, could not have comprehended it better: First then we might see the *English* passing by us, up to the Ears in Politics, yet settling the Nation no better than we do the *World* in the *Moon*; then follows a great Sea, and there perhaps some Vessel, not near in that Tranquility as we are; then come some of the *Iroquois* going to eat a Prisoner for their Breakfast, who seems as little concerned as his Devourers. After appear the Women of the Land of *Jesso*, who spend all their Time in dressing their Husband's Dinners and Suppers, and painting their Lips and Eye-brows Blue, only to please the

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the greatest Brutes in the World. Then the *Tartars* going devoutly on Pilgrimage to their Great *Prefter John*, who never comes out of a Gloomy Apartment all hung with Lamps, by the Light of which they pay their Adoration to him: Then the fair *Circassians*, who make no Scruples of granting every thing to the first Comer, except what they think essentially belongs to their Husbands: Then the Inhabitants of little *Tartary* going to steal Concubines for the *Turks* and *Persians*; and at last, our own dear Countrymen, it may be in some Points, as ridiculous as the best of 'em.

This, says the Countess, is very pleasant; but, to imagine what you tell me, tho' I were *above*, and saw all this, I would have the Liberty to hasten or retard the Motion of the *Earth*, according as the Objects pleased me more or less; and I assure you I should quickly send packing the *Politicians* and *Man-eaters*, but should have a great Curiosity for the fair *Circassians*; for methinks they have a Custom very particular. But I have a

Difficulty to solve, and you must be serious. As the *Earth* moves, the *Air* changes every Moment, so we breath the *Air* of another Country. Not at all, *replied I*, for the *Air* which encompasses the *Earth*, does not extend above a certain Height, perhaps 20 Leagues; it follows us and turns with us: Have you not seen the Work of a *Silk-Worm*, the *Shells* which those little Animals imprison themselves in, and weave with so much Art and Closeness; but yet their Covering is of a Down very loose and soft: So the *Earth* which is solid, is covered from the Surface 20 Leagues upwards with a kind of Down, which is the *Air*, and like the *Shell* of the *Silk-Worm* turns at the same Time. Beyond the *Air* is the *Celestial Matter*, incomparably more pure and subtle, and much more agitated than the *Air*.

Your Comparison, *says she*, is somewhat mean, and yet what Wonders are wrought, what Wars, what Changes in this *little Shell*? 'Tis true, *replied I*, but Nature takes no notice of such minute

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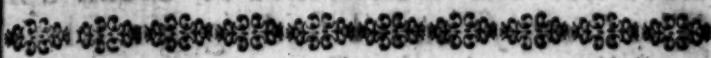
nute particular Motions, but drives us along with the general Motion, as if she were at Bowls.

Methinks, *says she*, 'tis very ridiculous to be upon a Thing that turns, and be in all this Perplexity, and yet not be well assured that it does turn; and to tell you the Truth, I begin to distrust the Reasons you give, why we should not be sensible of the Motion of the *Earth*; for is it possible there should not be some little Mark left, by which we might perceive it?

All Motions, *replied I*, the more common and natural they are, are the less perceptible, and this holds true even in Morality; the Motion of *Self-Love* is so natural to us, that for the most part we are not sensible of it, and we believe we act by other Principles. Now, *says she*, are you moralizing to a Question of *Natural-Philosophy* which is running wide of the Argument: But enough, this Lecture is sufficient for the first Time, let us now depart, and meet here again to-Morrow, You with your Systems, and I with my Ignorance. C 6 In

In returning back to the Castle, that I might say all I could on the Subject, I told her of a third System, invented by *Tycho Brache*, who had fixed the *Earth* in the *Center* of the *World*, turned the *Sun* round the *Earth*, and the rest of the *Planets* round the *Sun*; for since the New Discoveries, there was no Way left to have the *Planets* turn round the *Earth*. But the *Countess* with the quickest Apprehension, replied, she thought this too affected a System, that among so many great Bodies, the *Earth* only should be exempted from turning round the *Sun*; that it was improper to make the *Sun* turn round the *Earth*, when all the *Planets* turn round the *Sun*; and that tho' this Scheme was to prove the Immobility of the *Earth*, yet she thought it very improbable: So we resolved to stick to *Copernicus*, whose Opinion we thought most Uniform, Probable, and Diverting. In a Word, the Simplicity of his System, convinces us; and the Boldness of it surprizes with Pleasure.

The



The Second Evening's

CONVERSATION.

That the Moon is an Habitable World.



THE next Morning, as soon as any one could get Admittance, I sent to the Countess's Apartment, to know how she had rested, and whether the *Motion* of the *Earth* had not disturbed her? She returned for Answer, she began to be accustomed to it, and that *Copernicus* himself had not slept better. Some time after there came some Neighbours to Dinner, who stayed with her till the Evening, according to the tiresome Custom in the Country; nay, and they were very obliging in going then, for the Country likewise gives a Privilege of extending their Visit to the next Morning if they are so disposed, and have

have not the Conscience to break up. The *Countess* and I finding our selves at Liberty, in the Evening, we went again to the Park, and immediately fell upon our Systems: She so well retained what I told her the Night before, that she desired I would proceed without any Repetition. Well, Madam, *says I*, Since the *Sun*, which is now immovable, has left off being a *Planet*; and the *Earth* which turns round him is now become *one*, you'll not be surprized when you hear that the *Moon* is an *Earth* too, and a habitable World. I confess, *says she*, I have often heard talk of the *World* in the *Moon*, but I always looked upon it as Visionary and meer Fancy. And, *replied I*, it may be so still; I am in this Case, as People in a Civil-War, where the Uncertainty of what may happen, makes them hold Intelligence with the opposite Party, and correspond with their very Enemies; for tho' I do verily believe the *Moon* is Inhabited, I live civilly with those who do not believe it; and I am (like some
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honest Gentlemen in Point of Religion) still ready to embrace the prevailing Opinion; but till the Unbelievers have a more considerable Advantage, I declare for the Inhabitants of the Moon.

Suppose there had never been any Communication between *Paris* and *St. Dennis*, and one who was never beyond the Walls of this City, saw *St. Dennis* from the Towers of *Nostre-Dame*; you ask him if he believes *St. Dennis* is Inhabited as *Paris* is? He presently answers boldly, No; for, *says he*, I see very well the People at *Paris*, but those at *St. Dennis* I do not see at all, nor did I ever hear of any there: 'Tis true, you tell him, that from the Towers of *Nostre-Dame*, he cannot perceive any Inhabitants of *St. Dennis*, because of the distance; but all that he does discover of *St. Dennis*, very much resembles what he sees at *Paris*, the Steeples, Houses, and Walls, so that it may very well be Inhabited as *Paris* is; all this signifies nothing, my Cockney still maintains that *St. Dennis*

Dennis is not inhabited, because he sees no Body there. The *Moon* is our *St. Dennis*, and every one of us is like this *Parisian* Cockney, who never went out of his own City.

You are too severe, *says she*, upon your Fellow Citizens; we are not all sure so silly as your Cockney; since *St. Dennis* is just like *Paris*, he is a Fool if he does not think it inhabited: But the *Moon* is not at all like the *Earth*. Take care what you say, Madam, *replyed I*, for if the *Moon* resembles the *Earth*, you are under a Necessity to believe it inhabited. If it be so, *says she*, I own I cannot be dispensed from believing it; and you seem so confident of it, that I fear I must, whether I will or no. 'Tis true, the two *Motions* of the *Earth*, (which I could never imagine till now) do a little stagger me as to all the rest; but yet, how is it possible the *Earth* should enlighten as the *Moon* does, without which they cannot be alike? If that be all, *adds I*, the Difference is not great; for 'tis the *Sun* which is the sole Fountain

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tain of Light; that Quality proceeds only from him; and if the *Planets* give Light to us, it is because they first receive it from the *Sun*; the *Sun* sends Light to the *Moon*, and she reflects it back on the *Earth*; the *Earth* in the same manner receives Light from the *Sun*, and sends it to the *Moon*; for the Distance is the same between the *Earth* and the *Moon*, as between the *Moon* and the *Earth*.

But, *says the Countess*, is the *Earth* as fit to send back the Light of the *Sun* as the *Moon* is? You are altogether for the *Moon*, *said I*; she is much obliged to you; but you must know that Light is made up of certain little Balls, which rebound from what is Solid, but pass through what admits of an entrance in a right Line, as Air into Glafs: So that what makes the *Moon* enlighten us, is that she is a firm and solid Body, from which the little Balls rebound; and we must deny our Senses, if we will not allow the *Earth* the same Solidity: In short, the Difference is how we are seated; for
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the *Moon* being of so vast a distance from us, we can only discover her to be a Body of Light, and do not perceive that she is a great Mass, altogether like the *Earth*: Whereas on the contrary, because we are so near the *Earth*, we know her to be a great Mass, proper for the furnishing Provision for Animals; but do not discover her to be a Body of Light, for want of the due Distance: It is just so with us all, *says the Countess*, we are dazzled with the Quality and Fortune of those who are above us, when, do but examine Things nicely, we are all upon a Level.

Its very true, *replied I*, we would judge of all Things, but yet stand in the wrong Places; we are too near to judge of our selves, and too far off to know others: So that the true way to see Things as they are, is to stand between the *Moon* and the *Earth*; to be purely a Spectator of this World, and not an Inhabitant. I shall never be satisfied, *says she*, for the Injustice we do the *Earth*, and the too favourable Opinion we have
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of the *Moon*, till you assure me that the *Inhabitants* of the *Moon* are as little acquainted with their Advantages, as we are with ours; and that they take our *Earth* for a *Planet*, without knowing theirs is one too. Don't doubt it, answered I, we appear to them to perform very regularly our *Function* of a *Planet*: 'Tis true, they do not see us make a Circle round them, but that is no great matter. That half of the *Moon* which was turned towards us at the beginning of the World, has been turned towards us ever since; and those Spots in her, which we have fancied look like a Face, with Eyes, Nose and Mouth, are still the same, and if the other opposite half should appear to us, we should, no doubt, fancy another Figure from the different Spots that are in it: Not but that the *Moon* turns upon her self, and in the same time that she turns round the *Earth*, that is in a Month; but while she is making that turn upon herself, and that she should hide a Cheek, for Example, and appear somewhat else to us, she makes a like part of her Circle round

round the *Earth*, and still presents to us the same Cheek; so that the Moon, who in respect of the *Sun* and *Stars* turns round her self, in respect of us does not turn at all; they seem to her to rise and set in the space of fifteen Days; but for our *Earth*, it appears to her to be held up in the same Place of the Heavens: 'Tis true, this apparent Immobility is not very agreeable to a Body which should pass for a *Planet*, but it is not altogether perfect; the *Moon* has a kind of trembling which causes a little Corner of her Face to be sometimes hid from us, and a little Corner of the opposite half appears; but then, upon my Word, she attributes that trembling to us, and fancies that we have in the Heavens the Motion of a *Pendulum*, which vibrates too and fro.

I find, says the Countess, the *Planets* are just like us; we cast that upon others which is in our selves; says the *Earth*, 'Tis not I that turn, 'tis the *Sun*; the *Moon* says, 'tis not I that shake, 'tis the *Earth*; there is a great deal of Er-

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ror every where. But I would not advise you, *Madam*, to undertake the reforming it; you had better convince your self of the entire Resemblance of the *Earth* and the *Moon*: Imagine then these two great Bowls held up in the Heavens; you know that the *Sun* always enlightens the one half of a Body that is round, and the other half is in the Shadow; there is then one half of the *Earth*, and one half of the *Moon* which is enlightened by the *Sun*; that is, one half which is Day, and the other half which is Night. Observe also, that as a Ball has less force after it has been struck against a Wall, and rebounds to the other side, so is Light weakned when it is reflected. The Pale Light which comes to us from the *Moon*, is the very Light of the *Sun*, but it cannot come to us from the *Moon*, but by Reflection; it has lost much of the Force and Lustre it had when it came directly from the *Sun* upon the *Moon*; and that bright Light which shines directly upon us from the *Sun*, and which the *Earth* reflects

reflects upon the *Moon*, is as pale and weak when it arrives there; so that the Light which appears to us in the *Moon*, and enlightens our Nights, is the Part of the *Moon* which has Day; and that Part of the *Earth* which has Day, when it is opposite to the Part of the *Moon* which has Night, gives Light to it: All depends upon this, how the *Moon* and the *Earth* behold one another. At the beginning of the Month we don't see the *Moon*, because she is between the *Sun* and us; that half of her which has Day, is then turned towards the *Sun*; and that half which has Night, turned towards us; we can't see it then, because it has no Light upon it; but that half of the *Moon* which has Night, being turned to the half of the *Earth* which has Day, sees us without being perceived, and we then appear to them, just as the full *Moon* does to us; so that, as I may say, the Inhabitants of the *Moon* have then a full *Earth*; but the *Moon* being advanced upon her Circle of a Month,

comes

comes from under the *Sun*, and begins to turn towards us a little Corner of the half which is Light, that is, the Crescent; then those Parts of the *Moon* which have Night don't see all the half of the *Earth* which has Day, and we are then in the Wain to them.

I understand you perfectly, *says the Countess*, without Hesitation, I can comprehend the rest at Pleasure, and I have nothing to do but think a Moment, and bring the *Moon* upon her Circle of a Month. I see in general that, the *Inhabitants* of the *Moon* have a Month quite contrary to us; when we have a full *Moon*, their half of the *Moon* which is Light, is turned to our half of the *Earth* which is Dark; they don't see us at all, and they have then a New *Earth*, this is plain. I would not stand the Reproach of requiring a long Explication on so easy a Point: But, now tell me, how come the *Eclipses*? You may easily guess that, *Madam*, when it is new Moon, she is between the *Sun* and *Us*, and all her dark Half is

is turned towards us who have Light, that obscure Shadow is cast upon us: If the *Moon* be directly under the *Sun*, that Shadow hides him from us, and at the same Time obscures a part of that half of the *Earth* which is Light, which was seen by that half of the *Moon* which was Dark, here then is an *Eclipse* of the *Sun* to us during our Day, and an *Eclipse* of the *Earth* to the *Moon* during her Night. When it is full *Moon*, the *Earth* is between her and the *Sun*, and all the Dark half of the *Earth* is turned towards all the Light half of the *Moon*; the Shadow then of the *Earth* casts it self towards the *Moon*, and if it falls on the *Moon*, it obscures that Light half which we see, which then has Day, and hinders the *Sun* from shining on it: Here then is an *Eclipse* of the *Moon* to us during our Night, and an *Eclipse* of the *Sun* to the *Moon* during her Day: But the Reason that we have not *Eclipses* every Time that the *Moon* is between the *Sun* and the *Earth*, or the *Earth* be-

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tween the *Sun* and the *Moon*, is because these *three* Bodies are not exactly placed in a right Line, and by consequence that which should make the Eclipse, cast its Shadow a little beside that which should be obscured.

I am surpriz'd, *says the Countess*, that there should be so little Mystery in Eclipses, and that the whole World should not know the Cause of 'em. Nor ever will, *said I*, as some People go about it. In the *East Indies*, when the *Sun* and the *Moon* are in Eclipse, they believe a certain Devil, who has black Claws, is seizing on those *Planets* with his Talons; and during that Time, the Rivers are covered with the Heads of *Indians*, who are up to the Neck in Water, because they esteem it a very devout Posture, to implore the *Sun* and *Moon* to defend them against the Devil. In *America* they are persuaded, that the *Sun* and the *Moon*, when Eclipsed, are angry; And what is it they will not do to be reconciled with them? The *Greeks*, who were so refined also, D believed

believed the *Moon* was then enchanted, and that the Magicians forced her to descend from Heaven, and shed a malignant Juice on the Plants; nay, what a pannick fear were we in, not many Years ago, at an Eclipse of the Sun? When People hid themselves in Cellars, and all the Philosophers who treated of its Cause, could not persuade them to come out till the Eclipse was over?

In good faith, *says she*, 'tis scandalous for Men to be such Cowards; there ought to be a general Law of Mankind to prohibit the discoursing of Eclipses, that we might not call to mind the Follies which have been *said*, and *done*, upon that Subject. Your Law then, *says I*, must abolish even the Memory of all Things, and forbid us to speak at all, for I know nothing in the World which is not a Monument of the Folly of Man.

But what d'ye think, *adds she*, of the *Inhabitants* of the *Moon*, are they as fearful of an Eclipse as we are? It would be a very good Jest to see the *Indians* there up to the Neck in Water; that

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Plurality of WORLDS. 51

the *Americans* should believe the *Earth* angry with them; the *Greeks* fancy we were bewitched, and would destroy their Plants; in short, that we should cause the same Consternation among them, as they do among us. And why not, Madam, I don't at all doubt it; for why should the People in the *Moon* have more Wit than we? What right have *they* to fright us and not we *them*? For my part, *continued I laughing*, I believe that since a prodigious Company of Men have been, and still are, such Fools to adore the *Moon*, there certainly are People in the *Moon*, that worship the *Earth*, and that we are upon our Knees the one to the other. But sure, *says she*, we don't pretend to send any *Influences* to the *Moon*, and to give a Crisis to her Sick; if the People have any Wit in those Parts, they'll soon destroy the Honour we flatter our selves with, and I fear, we shall have the Disadvantage.

Madam, *says I*, don't fear that, d'ye think we are the only Fools of the Universe? Is it not confident with Ignorance

rance to spread it self every where? 'Tis true, we can only guess at the Folly of the People in the *Moon*, but I no more doubt it, than I do the most Authentick News that comes from thence. What authentick News comes from thence, *says she*? That which the Learned bring us, *reply'd I*, who travel thither every Day with their Tubes and Telescopes; they'll tell you of their Discoveries, of Lands, Seas, Lakes, high Mountains, and deep Abysses.

Indeed, *answered she*, I fancy they may discover Mountains and Abysses, because of the remarkable Inequality; but how do they distinguish Lands and Seas? Very easily, Madam, for the Waters letting part of the Light pass thro' them, send back but a very little, so that they appear afar off like so many dark Spots; whereas the Lands being solid, reflect the whole Light, and appear to be more bright and shining: The famous Monsieur *Cassini*, a Man of the largest Acquaintance in the World with the Firmament, discovered in the

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Plurality of WORLDS. 53

Moon something which divided, then reunited, and sunk in a sort of Wells: We may with very much Probability suppose this was a River. Nay, they pretend to be so well acquainted with the several Places, that they have given them all Names; one they call *Copernicus*, another *Archimedes*, and a third *Galileus*; there is the *Caspian Sea*, the *Black Lake*, the *Prophirite Mountains*; in short, they have published such exact Descriptions of the *Moon*, that a mere Almanack-maker will be no more to seek there, than I am in *Paris*.

I must own then, *says the Countess*, they are very exact; but what they say to the inside of the Country, I would very fain know? 'Tis impossible, *replied I*, the most learned Astronomers of our Age cannot inform you. You must ask that of *Astolfo*, who was carried into the *Moon* by *St. John*. I am going to tell you one of the agreeable Follies of *Ariosto*, which I'm confident you'll be well pleased to hear: I must confess he had better have let alone *St. John*,

whose Name is worthy of Respect; but 'tis a Poetical License, and must be allowed. The Poem, which is called *Orlando Furioso*, is dedicated to a Cardinal, and a great Pope has honoured it with his Approbation, which is prefixed to several of the Editions: This is the Argument. Rowland, Nephew to Charlemagne, runs mad, because the fair Angelica prefers Medore before him. Astolfo, a Knight-Errant, finding himself one Day in the Terrestrial Paradise, which was upon the Top of a very high Mountain, where he was carried by his flying Horse, meets St. John there, who tells him, if he would have Rowland cured, he must make a Voyage with him into the Moon. Astolfo, who had a great Mind to see New Countries, did not stand much upon intreaty, there immediately came a fiery Chariot which carried the Apostle and the Knight up into the Air; Astolfo being no great Philosopher, was surprized to find the Moon so much bigger than it appeared to him when he was upon the Earth; to see

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Plurality of WORLDS. 55

see Rivers, Seas, Mountains, Cities, Forests, nay, what would have surprized me too, Nymphs hunting in those Forests; but that which appear'd most remarkable, was a Valley where you might find any Thing that was lost in our World, of what Nature soever; Crowns, Riches, Fame, and an infinity of Hopes; the time we spend in Play, and in searching for the Philosopher's Stone, the Alms we give after our Death, the Verses we present to great Men and Princes, and the Sighs of Lovers. I do'nt know, says the Countess, what became of the Sighs of Lovers in Ariosto's Time, but I fancy there are very few of 'em ascend to the Moon in our Days. Ah, Madam, reply'd I, how many does Your Ladyship send thither every Day? Those that are address'd to you will make a considerable Heap; and I assure you the Moon keeps all safe that is lost here below: Yet I must tell you, Ariosto does but whisper it; tho' every Thing is there, even the Donation of Constantine; (the Popes having pretended

to be Masters of *Rome* and *Italy*, by Virtue of a *Donation* which the Emperor *Constantine* made *Silvester*; and the Truth on't is, no Body knows what's become of it:) But what do you think is not to be found in the *Moon*? *Folly*: All that ever was upon the Earth is kept there still, but in lieu of it, 'tis not to be imagined how many *Wits* (if I may so call 'em) that are lost here, are got up into the *Moon*, they are so many Vials full of a very subtile Liquor, which evaporates immediately, if it be not well stopped; and upon every one of these Vials the Names are written to whom the *Wits* belong: I think *Aristotle* has heaped 'em upon one another a little confusedly, but for Order's sake we will fancy 'em placed upon Shelves in a long Gallery; *Astolfo* wondered to see several Vials full, inscribed with the Names of Persons whom he thought considerable for their Wisdom. To confess the Truth, I begin to fear since I have entertained you with these philosophical and poetical Visions,

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Mine there, is not very empty; however, 'tis some Consolation to me, that while you are so attentive, you have a little Glass full, as well as your humble Servant: The good Knight found his own Wits among the rest, and with the Apostle's leave snuffed it all up his Nose, like so much *Hungary Water*; but *Ariosto* said he did not carry it far, it returned again to the *Moon* a little after.

Well, he did not forget *Rowland's* Vial, which was the Occasion of his Voyage; but he was cursedly plagued to carry it, for *Heroes* Wits are naturally very heavy, and there did not want one Drop of it: To conclude, *Ariosto*, according to his laudable Custom of saying whatever he pleases, addresses himself to his Mistress in very beautiful Verses.

* Fair Mistress, who for me to Heav'n shall fly,
To bring again from thence my wandring Wit?
Which I still lose, since from that piercing Eye
The Dart came forth that first my Heart did hit:

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* Sir John Harrington's Translation of *Ariosto*.

Nor of my Loss at all complain would I,
 Might I but keep that which remaineth yet:
 But if it still decrease, within short Space,
 I doubt I shall be in Rowlando's Case;

Yet, well I wot where to recover mine,
 Tho' not in Paradise, nor Cynthia's Sphere,
 Yet doubtless in a Place no less Divine,
 In that sweet Face of yours, in that fair Hair,
 That ruby Lip, in those two Star-like Eyn,
 There is my Wit, I know it wanders there,
 And with my Lips, if you would give me leave,
 I there would search, I thence would it receive.

Is not this very pleasant? To reason like *Ariosto*, the safest Way of losing our Wits, is, to be in Love; for you see they don't go far from us, we may recover 'em again at our Lips; but when we lose 'em by other Means, as for Example, by Philosophizing, they are gone with a Jerk into the Moon, and there is no coming at 'em again when we would. However, *says the Countess*, our Vials have an honourable Station among the Philosophers, when 'tis Forty to One, but Love fixes our Wits on an Object we cannot but be ashamed of: But to take away mine entirely, pray tell me very

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Plurality of WORLDS. 59

very seriously, if you believe there are any *Men* in the *Moon*, for methinks hitherto you have not been very positive: For my Part, *says I*, I don't believe there are *Men* in the *Moon*, for do but observe how much the Face of Nature is changed between this and *China*; other Visages, Shapes, Manners; nay, almost other Principles of Reason; and therefore between *Us* and the *Moon* the Alteration must be much more considerable. In the Lands that have been lately discovered, we can scarce call the Inhabitants *Men*, they are rather Animals in Human Shape, and that too sometimes very imperfect, almost without Human Reason; he therefore that will travel to the *Moon*, must not expect to find *Men* there.

What sort of People are they then, *says the Countess*, with an Air of Impatience? Troth, Madam, *reply'd I*, I don't know; for put the Case that we our selves inhabited the *Moon*,

and were not Men, but rational Creatures; could we imagine, d'ye think, such fantastical People upon the Earth, as Mankind is? Is it possible we should have an Idea of so strange a Composition, a Creature of such foolish Passions, and such wise Reflections? Granted but such a Span of Life, and yet pursuing Views of such Extent? So Learned in Trifles, and so stupidly Ignorant in Matters of the greatest Importance? So much concern for Liberty, and yet such great Inclinations to Servitude? So desirous of Happiness, and yet so very incapable of being so? The People in the *Moon* must be wise indeed to suppose all this of us. But don't we see our selves continually, and can't so much as guess how we were made? So that we are forced to say the Gods when they created us were drunk with *Nectar*; and when they were sober again, could not chuse but laugh at their own Handy-work. Well, well, *says the Countess*, we are safe enough then, they in the *Moon* know nothing of us; but
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Plurality of WORLDS. 61

I could wish we were a little better acquainted with them, for it troubles me that we should see the *Moon* above us, and yet not know what is done there. Why, *says I*, are you not as much concerned for that part of the Earth which is not yet discovered? What Creatures inhabit it, and what they do there? For we and they are carried in the same Vessel: They possess the Prow, and we the Poop, and yet there is no manner of Communication between us; they don't know at one end of the Ship who lives, or what is done at the other end; and you would know what passes in the *Moon*, which is another great Vessel, sailing in the Heavens at a vast distance from us.

Oh, *says she*, for the *Earth* I reckon it all as good as discovered, and can guess at the People, tho' I never heard a Word of 'em; for 'tis certain they all very much resemble us, and we may know 'em better when we have a mind to't; they'll stay where they are, and 'tis no more but going to see 'em; but

but we can't get into the *Moon* if we would, so that I despair of knowing what they do there. You'll laugh at me, *says I*, if I should answer you seriously, perhaps I may deserve it, and yet, I fancy, I can say a great deal to justify a ridiculous Thought that is just now come into my Head; nay, to use the Fool's best Argument, I'll lay a Wager I make you own (in spite of Reason) that one of these Days there may be a Communication between the *Earth* and the *Moon*, and who knows what great Advantages we may reap by it? Do but consider *America* before it was discovered by *Columbus*, how profoundly Ignorant were those People, they knew nothing at all of Arts and Sciences, they went naked, had no other Arms but Bows and Arrows, and did not apprehend they might be carried by Animals; they looked upon the Sea as a wide Space, not for the use of Men, that it was joined to the Heavens, and beyond it was nothing: 'Tis true, after having spent whole Years in following

lowing the Trunks of great Trees with sharp Stones, they put themselves to Sea in these Trunks, and floated from Land to Land, as the Wind and Waves drove them; but how often was their Trough overfet, and they forced to recover it again by swimming? So that (except when they were on Land) it might be said they were continually swimming: And yet had any one but told them of another kind of Navigation incomparably more perfect and useful than their own, that would easily convey over that infinite Space of Water, that they might stop in the middle of the Waves, and in some Sense command the Winds, and make their Vessel go fast, or slow, as they pleased; in short, that this impassable Ocean should be no Obstacle to their conversing with another different People; d'ye think they'd have believed you? And yet at last that Day is come; the unheard-of, and most surprizing Sight appears; vast great Bodies, with White Wings, are seen to fly upon the Sea, to vomit Fire from

from all Parts, and to cast on their Shores an unknown People, all scaled with Iron, who dispose and govern Monsters as they please; carry Thunder in their Hands, and overthrow and destroy who ever resists them: From whence came they? Who brought them over the Sea? Who gave to them the Disposal of the Fire of Heaven? Are they Gods? Are they the Offspring of the Sun? For certainly they are not Men. Do but consider, Madam, the surprize of the *Americans*, there can be nothing greater; and after this, will any one say there shall never be a Communication between the *Moon* and the *Earth*. Did the *Americans* believe there would ever be any between them and *Europe*, till it came to pass? 'Tis true, you must pass this great Space of Air and Heaven which is between the *Earth* and the *Moon*; but did not those vast Seas seem at first as impassable to the *Americans*? You rave, I think, *says she*; Who denies it, Madam? *said I*. Nay, but I'll prove it, *replies*

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plies *she* I don't care for your bare
owning it. Did you not own the *A-*
mericians were so ignorant, that they
had not the least Conception of crossing
the Sea; but we, who know a great
deal more than they, can imagine and
fancy the going through the Air, though
we are assured it is not to be done.
There is somewhat more than Fancy,
replied I, when it has been already
practised, for several have found the se-
cret of fastening Wings, which bear
them up in the Air, to move them as
they please, and to fly over Rivers,
and from Steeple to Steeple; I cannot
say indeed they have yet made an *Ea-*
gle's flight, or that it does not cost now
and then a Leg or an Arm to one of
these New Birds; but this may serve
to represent the first Planks that were
launched on the Water, and which
were the beginning of Navigation;
there were no Vessels then thought of
to sail round the World, and yet you
see what great Ships are grown by lit-
tle and little from those rude Planks.

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The *Art of Flying* is but newly invented, 'twill improve by degrees, and in time grow perfect; then we may fly as far as the *Moon*. We don't yet pretend to have discovered all Things, or that what we have discovered can receive no Addition; and therefore, pray let us agree, there are yet many Things to be done in the Ages to come. Were you to live a Thousand Years, *says the Countess*, I can never believe you'll fly, but you must endanger your Neck. I will not, *replied I*, be so unmannerly as to contradict a fair Lady; but tho' we can't learn the *Art* here, I hope you will allow they may fly better in the Moon; 'tis no great matter whether we go to them, or they come to us, we shall then be like the *Americans*, who knew nothing of Navigation, and yet there were very good Ships at t'other end of the World. Were it so, *says she*, in a sort of a Passion, the *Inhabitants* of the *Moon* would have been here before now. All in good time, *says I*, the *Europeans* were not in *America*
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till about some Six Thousand Years; they were so long in improving Navigation to the Point of crossing the Ocean. The *People* in the *Moon* have already made some short Voyages in the Air; they are exercising continually, and by degrees will be more expert, then we shall see them, and God knows how we shall be surprized. It is unsufferable, *says she*, you should banter me at this rate, and justify your ridiculous Fancy by such false Reasoning. I'm going to demonstrate, *says I*, you Reproach me very unjustly: Consider, Madam, that the World is unfolded by degrees; for the Ancients were very positive, that the *Torrid* and *Frigid-Zones* were not habitable, by reason of their excessive Heat and Cold; and in the time of the *Romans*, the general Map of the World was but very little extended beyond that of their *Empire*; which, though in one respect, expressed much Grandeur, in another sense, was a sign of as great Ignorance; however, there were Men found both in very hot
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and in very cold Countries, so that you see the World is already increased; after that, it was thought that the *Ocean* covered the whole *Earth*, except what was then discovered: There was no talk then of the *Antipodes*, not so much as a thought of them, for who could fancy their Heels at top, and their Heads at bottom? And yet, after all their fine Reasoning, the *Antipodes* were discovered; here's now another half of the World starts up, and a new Reformation of the Map; methinks this, Madam, should restrain us, and teach us not to be so positive in our Opinions, the World will unfold itself more to us hereafter; we shall then know the *People* in the *Moon*, as well as we do now the *Antipodes*; but all Things must be done in Order, the whole *Earth* must be discovered; and till we are perfectly acquainted with our own Habitation, we shall never know that of our Neighbours. Without fooling, *says the Countess*, looking earnestly upon me, you are so very profound in this Point, that I begin

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begin to think you are in earnest, and believe what you say. Not so neither, *says I*, but I would shew you how easy it is to maintain a Chimerical Notion, that may perplex a Man of Understanding; but never convince him; there is not any Argument so persuasive as Truth, which has no need to exert all its Proofs, but enters naturally into our Understanding; and when once we have learn'd it, we do nothing but think of it. I thank you then, *says she*, for imposing on me no longer; for I confess your false Reasoning disturbed me, but now I shall sleep very quietly, if you think fit to go Home.



The

 The Third Evening's
 CONVERSATION.

*Some Particulars concerning the World
in the Moon, and Proofs of the other
Planets being likewise Inhabited.*



THE Countess was so intent upon her Notions, that she would fain have engaged me next Day, to proceed where I left off; but I told her, since the *Moon* and *Stars* were become the Subject of our Discourse, we should trust our Chymeras with no body else: At Night we went again into the Park, which was now wholly dedicated to our learned Conversation.

Well, Madam, *says I*, I have great News for you; that which I told you last Night, of the *Moon's* being *inhabited*, may be otherwise now: There is a
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new Fancy got into my Head, which puts those People in great Danger. I cannot, *says the Countess*, suffer such Whims to take place. Yesterday you were preparing me to receive a Visit from the *Lunarians*, and now you would insinuate there are no such Folks in Nature: You must not trifle with me thus; once you would have me believe the *Moon* was *Inhabited*; I surmounted the Difficulty I had, and will now believe it. You are a little too nimble, *reply'd I*, did not I advise you never to be entirely convinced in Things of this nature, but to reserve half your Understanding free and disengaged, that you might admit of a contrary Opinion, if there should be any occasion. I care not for your Suppositions, *says she*, let us come to Matter of Fact. Are we not to consider the *Moon* at *St. Dennis*? No, *says I*, the *Moon* does not so much resemble the *Earth*, as *St. Dennis* does *Paris*: The *Sun* draws *Vapours* from the *Earth*, and *Exhalations* from the *Water*, which mounting to a certain height in the Air, do

do there assemble and form the *Clouds*; these uncertain *Clouds* are driven irregularly round the *Globe*, sometimes shadowing one Country, and sometimes another; he then who beholds the *Earth* from afar off, will see frequent Alteration upon its Surface, because a great Country overcast with *Clouds*, will appear dark or light, as the *Clouds* stay, or pass over it; he'll see the *Spots* on the *Earth* often change their Place, and appear or disappear as the *Clouds* remove; but we see none of these changes wrought upon the *Moon*, which would certainly be the same, were there but *Clouds* about her; but on the contrary, all her *Spots* are fixed and certain, and her light parts continue where they were at first, which indeed is a great Misfortune; for by this Reason, the *Sun* draws no *Exhalations* or *Vapours* above the *Moon*; so that it appears she is a *Body* infinitely more hard, and solid than the *Earth*; whose subtile Parts are easily separated from the rest, and mount upwards as

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soon as Heat puts them in Motion : But it must be a heap of Rock and Marble, where there is no Evaporation ; besides, *Exhalations* are so natural and necessary where there is *Water*, that there can be no *Water* at all, where there is no *Exhalation* ; and what sort of Inhabitants must those be, whose Country affords no Water, is all Rock, and produces nothing ? Very fine, *says she*, you have forgot since you assured me, we might from hence distinguish *Seas* in the *Moon*. Pray, what is become of your *Caspian Sea*, and your *Black Lake* ? All Conjecture, Madam, *replied I*, tho' for your Ladyship's Sake, I am very sorry for it ; for those dark Places we took to be *Seas*, may perhaps be nothing but large Cavities ; 'tis hard to guess right at so great a distance. But will this suffice then, *says she*, to extirpate the People in the *Moon* ? Not altogether, *replied I*, we will neither determine *for*, nor *against* them. I must own my Weakness, (if it be one) *says she*, I can't be so perfect-

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ly undetermined as you would have me to be, but must believe one way or other; therefore pray fix me quickly in my Opinion, as to the *Inhabitants* of the *Moon*; preserve or annihilate them, as you please; and yet, methinks I have a strange Inclination for 'em, and would not have 'em destroyed, if it were possible to save them. You know, *says I*, Madam, I can deny you nothing; the Moon shall be no longer a Desert, but to do you service, we will re-people her. Since to all appearance the Spots in the Moon do not change, I can't conceive there are any Clouds about her, that sometimes obscure one part, and sometimes another; yet this does not hinder, but that the Moon sends forth Exhalations, and Vapours. Our Clouds which we see in the Air, are nothing but Exhalations and Vapours, which at their coming out of the Earth, were separated into such minute Particles, that they could not be discerned; but as they ascend higher, they are condensed by the Cold, and by the re-union

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union of their Parts, are rendered visible; after which they become great Clouds, which fluctuate in the Air, their improper Region, till they return back again in Rain; however these Exhalations and Vapours, sometimes keep themselves so dispersed, that they are imperceptible; or if they do assemble, it is in forming such subtile Dews that they cannot be discerned to fall from any Cloud. Now, as it seems incredible the *Moon* should be such a Mass, that all its parts are of an equal Solidity, all at rest one with another, and all incapable of any alterations from the efficacy of the *Sun*: I am sure we are yet unacquainted with such a Body. Marble it self is of another Nature, and even that which is most Solid, is subject to Change and Alteration; either from the secret and invisible Motion it has within it self, or from that which it receives from without: It may so happen that the Vapours which issue from the *Moon*, may not assemble round her in Clouds, and may not fall back again

in Rain, but only in Dews. It is sufficient for this, that the Air with which the Moon is surrounded (for it is certain *She* is so, as well as the *Earth*) should somewhat vary from *our* Air, and the Vapours of the *Moon* be a little different from those of the *Earth*, which is very probable. Hereupon the Matter being otherwise disposed in the Moon than on the Earth, the Effects must be different; though it is of no great Consequence whether they are or no; for from the Moment we have found an inward Motion in the Parts of the Moon, or one produced by foreign Causes, here is enough for the new Birth of its Inhabitants, and a sufficient and necessary Fund for their Subsistence. This will furnish us with Corn, Fruit, Water, and what else we please; I mean according to the Custom or Manner of the Moon, which I do not pretend to know; and all proportioned to the Wants and Uses of the Inhabitants, with whom I pretend to be as little acquainted.

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That is to say, replied the *Countess*, you know all is very well, without knowing how it is so, which is a great deal of Ignorance founded upon a very little Knowledge; however, I comfort my self, that you have given the Moon her Inhabitants again, and have envelop'd her in an Air of her own, without which a Planet would seem to me but very naked.

It is these two different Airs, *Madam*, that hinder the Communication of the two Planets; if it was only *flying*, as I told you Yesterday, who knows but we might improve it to Perfection, tho' I confess there is but little Hopes of it; the great Distance between the Moon and the Earth is a Difficulty not easily to be surmounted; yet were the Distance but inconsiderable, and the two Planets almost contiguous, it would be still impossible to pass from the Air of the one, into the Air of the other: The Water is the Air of Fishes, they never pass into the Air of the Birds, nor the Birds into the Air of the Fish; and yet

'tis not the Distance that hinders them, but both are imprisoned by the Air they breath in ; we find our Air consists of thicker and grosser Vapours than the Air of the Moon. So that one of her Inhabitants arriving at the Confines of our World, as soon as he enters our Air, will inevitably drown himself, and we shall see him fall dead on the Earth.

I should rejoice, *says the Countess*, to see a Wreck of a good Number of these *Lunar* People, how pleasant would it be to behold 'em lie scattered on the Ground, where we might consider at our Ease, their extraordinary Figures? But, *replied I*, suppose they could swim on the outward Surface of our Air, and be as curious to see us, as you are to see them ; should they Angle or cast a Net for us, as for so many Fish, would that please you? Why not? *Says the Countess*, smiling ; for my part I would go into their Nets of my own accord, were it but for the Pleasure to see such strange Fishermen.

Confi-

Consider, Madam, you would be very sick, when you were drawn to the Top of our Air, for there is not a Respiration in its whole Extent, as may be seen on the Tops of some very high Mountains; and I admire that they who have the Folly to believe that our *Fairies*, whom they allow to be Corporeal, and to inhabit the most pure and refined Air; do not tell us that the Reason why they give us such short and seldom Visits, is that there are very few among them who can dive; and those that can, if it be possible to get through the thick Air where we are, cannot stay half so long in it, as your Diving-Fowls can in the Water. Here then are natural Barri- cades, which defend the Passage out of our World, as well as the *Entrance* into the Moon; and as we can only guess at that World, let us fancy all we can of it. For Example, I will sup- pose that we may there see the Fir- mament, the Sun, and the Stars, of a- nother Colour than what they are here; all these appear to us through a kind of

natural Opticks, which change and alter the Objects. These Spectacles, as we may call 'em, are our Air, mixed as it is with Vapours and Exhalations, and which does not extend it self very high. Some of our modern Philosophers pretend, that of it self it is Blue, as well as the Water of the Sea, and that this Colour neither appears in the one nor in the other, but at a great depth; the Firmament, say they, where the fixed Stars are placed, has no peculiar Light of its own, and by Consequence must appear Black, but we see it thro' the Air, which is Blue, and therefore to us it appears Blue; which, if so, the Beams of the Sun and Stars cannot pass through the Air without being tinged a little with its Colour, and losing as much of their own; yet, were the Air of no Colour, it is very certain, that through a great Mist the Light of a *Flambeaux* at some Distance appears Red, though it be not its true natural Colour. Our Air is nothing but a great Mist, which changes the true Colour

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Plurality of WORLDS. 81

both of the Sky, Sun, and Stars; it belongs only to the Celestial Matter to bring us the Light and Colours as they really are in all their Purity; so that since the Air of the *Moon* is of another Nature than *our* Air, or is diversified by another Colour, or at least is another kind of Mist, which varies the Colours of the *Celestial Bodies*; in short, as to the People of the Moon, their Spectacles, through which they see every Thing, are changed.

If it be so, *says the Countess*, I prefer *this* Abode before *that* of the Moon; I cannot believe the *Celestial* Colours are so well mixed as they are here; for Instance, let us put Green Stars on a Red Sky, they can't be so agreeable as Stars of Gold on an Azure Firmament. One would think, Madam, you was chusing a Petticoat, or a Suit of Knots; but, believe me, Nature does not want Fancy; leave it to her to chuse Colours for the Moon, and I will engage they shall be well sorted; she will not fail to vary the Prospect of the

Universe, at every different Point of Sight, and the Alteration shall always be very agreeable.

I know very well, *says the Countess*, her Skill in this Point; she is not at the Charge of changing the *Objects*, but only the *Opticks*, and has the Credit of this great Variety, without being at any Expence; with a Blue Air, she gives us a Blue Firmament; and perhaps with a Red Air, she gives to the Inhabitants of the Moon a Red Firmament, and yet still it is but the same Firmament; nay, I am of Opinion, she has placed this sort of Spectacles in our Imagination, through which we see all Things, and which to every particular Man change the Objects. *Alexander* looked on the Earth as a fit Place to establish a great Empire, it seemed to *Ce-ladon* a proper Residence for *Astræa*, and it appeared to a *Philosopher*, a great Planet in the Heavens, covered with Fools: I do not believe the Sights vary more between the *Earth* and the *Moon*, than they do between the Fancies of two different Men.

This

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This change in our Imaginations, *says* I, is very surprizing; for they are still the same Objects, tho' they appear different; when in the Moon we may see other Objects we do not see here, or at least, not see all there, we do see here; perhaps in that Country they know nothing of the Dawn and the Twilight, before the Sun rises, and after the Sun sets; the Air which *encompasses*, and is *above* us, receives the Rays, so that they cannot strike on the Earth; and being gross, stops some of them, and sends them to us, tho' indeed they were never naturally designed us; so that the Day-break, and the Twilight, are a favour which Nature bestows on us; they are a Light which don't fall to our share, and which she gives us over and above our due; but in the Moon, where the Air is apparently more pure, and therefore not so proper to send down the Beams it receives from the Sun before his rising, and after his setting; they have not that Light of Grace (as I may call it) which growing great-

er by degrees, does more agreeably prepare 'em for the arrival of the Sun, and which growing weaker, and diminishing by degrees, does insensibly prepare 'em for the Sun's departure: But they are in a profound Darkness, where a Curtain (as it were) is drawn all on a sudden, their Eyes are immediately dazled with the whole Light of the Sun, in all its Glory and Brightness; so likewise, they are on a sudden surprized with utter Darkness; the Night and the Day have no medium between them, but they fall in a Moment from one extreme into the other. The Rainbow likewise is not known to the Inhabitants of the Moon; for if the Dawn is an effect of the grossness of the Air and Vapours, the Rainbow is formed in the Clouds, from whence the Rain falls; so that the most beautiful Things in the World, are produced by those Things which have no Beauty at all. Since then there are no Vapours thick enough, nor no Clouds of Rain about the Moon, farewell Dawn, adieu Rainbow: What must

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must Lovers do for Similies to compare their Mistresses to, in that Country, when such an inexhaustible Magazine of Comparisons is taken from them?

Nay, I shall never lay the loss of their Comparisons much to Heart, *says the Countess*; and I think 'em well enough recompenced for the Loss of our Dawn, and Rainbow; for by the same Reason, they have neither Thunder nor Lightning, both which are formed in the Clouds; how glorious are their Days, the Sun continually shining? How pleasant their Nights, when not the least Star is hid from them? They never hear of Storms or Tempests, which seems plain Effects of the Wrath of Heaven. Do ye think then they stand in need of our Pity? You are describing the Moon, *replied I*, like an enchanted Island; but do ye think it is so pleasant to have a scorching Sun always over our Head, where the Days are fifteen times as long as ours, and not the least Cloud to moderate its Heat? Though I fancy it is for this Reason that Nature has made
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great Cavities in the Moon; we can discern them easily with Our Telescopes, for they are not Mountains, but so many Wells or Vaults in the middle of a Plain; and how can we tell but the Inhabitants of the Moon, (being continually broiled by the excessive Heat of the Sun) retire into those great Wells; perhaps they live no where else, and it is there they build them Cities; for we still see in the Ruins of Old *Rome*, that *Part* of the City which was under Ground, was almost as large as *That* which was above. We need but take that *Part* away, and the rest would remain like one of these Lunar Towns; the whole People reside in Wells, and from one Well to another there are subterraneous Passages for the Communication of the Inhabitants. I perceive, Madam, you laugh at me, and you are welcome; but to be free with your Ladyship, the ridicule turns more against *you* than *me*: For you believe the People in the Moon must live upon the Surface of their Planet, because we

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do so upon Ours, but the contrary is evident, for as we dwell upon the Superficies of our Planet, they cannot dwell upon the Superficies of Theirs; if things differ so much in This World, what must they do in Another?

It is no matter, *says the Countess*, I can never suffer the Inhabitants of the Moon to live in perpetual Darkness. You will be more concerned for them, Madam, when I tell you that one of the ancient Philosophers long since discovered the Moon to be the Residence of Blessed Souls departed out of this Life, and that all their Happiness consisted in hearing the *Music* of the *Spheres* which is made by the Motion of the Celestial Bodies: And that Philosopher pretending to know exactly all they do there, he tells you, that when the Moon is obscured by the Shadow of the Earth, they no longer hear the heavenly Harmony, but howl like so many Souls in Purgatory; so that the Moon taking Pity on them, makes all the haste she can to get into the Light again.

again. Methinks then, *says the Countess*, we should now and then see some of these Blessed Souls arrive here from the Moon, for certainly they are sent to us; and between the two Planets, some think, there is a sufficient Provision made for the Felicity of Souls, by their Transportation into a new World. I confess indeed, *replied I*, it would be very pleasant to see new Worlds; such a Voyage, though but in Imagination, is very delightful; but what would it be in Effect? It would be much better certainly than to go to *Japan*, which at best, is but crawling from one end of the Globe to the other, and after all to see nothing but Men. Well then, *says the Countess*, let us travel over the Planets as fast as we can; what should hinder us? Let us place our selves at all the different Prospects, and from thence consider the Universe. But first, have we any more to see in the Moon? Yes, Madam, *replied I*, our Description of that World is not entirely exhausted; you cannot but remember that the two
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Movements, which turn the Moon on herself and about us, being equal; the one always presents to our Eyes that part, of which the Other must consequently deprive us; and so she always to us wears the same Face: We have then but one Moiety of her which looks on us, and as the Moon must be supposed not to turn on her own Center, in respect to us, that Moiety which sees us always, and that which never sees us, remains fixed in the same Point of the Firmament. When it is Night with her, and her Nights are equal to fifteen of our Days, she at first sees but a little Corner of the Earth enlightened, after that a larger Spot, and so almost by hourly Gradations, spread her Light till it covers the whole Face of the Earth; whereas these same Changes do not appear to us to affect the Moon, but from one Night to another, because we lose her a long time out of our Sight. I would give any thing that I could possibly divine the awkward Reasonings of the Philosophers of their World, upon our Earth's appearing immoveable to them, when

when all the other Celestial Bodies rise and set over their Heads, within the Compass of fifteen Days. It is plain they attribute this Immoveability to her Bigness, for she is forty times larger than the Moon, and when their Poets have a mind to extol indolent Princes, I doubt not but they take care to compare their Inactivity to this Majestick Repose of the Earth. However, this Opinion is attended with one Difficulty; they must very sensibly perceive in the Moon, that our Earth turns upon her own Center. For Instance, imagine that *Europe*, *Asia*, and *America* present themselves one after another to them in Miniature, and in different Shapes and Figures, almost as we see them upon our Maps. Now this Sight must be a Novelty to such Travellers as pass from that Moiety of the Moon which *never* sees us, to that which *always* does. Good God! How cautious would they be of believing the Relation of the first Travellers, who should speak of it after their Return to that

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great Country, to which we are so utterly unknown? Now I fancy, *says the Countess*, that they make a sort of Pilgrimage from one Side of their Country to the other, for their Discoveries in our World, and that there are certain Honours and Privileges assigned to such, as have once in their Lives had a View of our gross Planet. At least, *replied I*, those who have had this View obtained the Privilege of being better lighted, during their Nights, the Residence in the other Moiety of the Moon must of Necessity be much less commodious in that respect. But let us continue the Journey we proposed to take, Madam, from one Planet to another, for we have now had a pretty curious View of the *Moon*.

As we leave the *Moon*, on that side next the Sun, we see *Venus*, which puts me again in mind of St. Dennis: *Venus* turns upon her self, and round the Sun, as well as the Moon; they likewise discover by *their* Telescopes, that *Venus*, like the Moon (if I may speak after the

the same Manner) is sometimes New, sometimes Full, and sometimes in the Wane, according to the different Situations she is in, with Respect of the Earth.

The Moon, to all Appearance, is inhabited, why should not *Venus* be so too? You are so full of your *Whys*, and your *Wherefores*, says the Countess, interrupting me, that I fancy you are sending Colonies to *all* the Planets. You may be certain, Madam, that is my Intention, and I see no reason to the contrary; we find that *all* the Planets are of the same Nature, all obscure Bodies, which receive no Light but from the Sun, and then send it to one another; their Motions are the same, so that hitherto they are alike; and yet if we are to believe that these vast Bodies are not inhabited, I think they were made but to little Purpose; why should Nature be so partial, as to except only the Earth? But let who will say the contrary, I must believe the Planets are peopled as well as the Earth. I find, says the Countess, you have been very well confirmed in your
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Plurality of WORLDS. 93

Notions this pretty while: It was but some Moments since, that the Moon was a Defart, and you were in no Concern at it; and at this Instant, I see you would be in a violent Passion, if any one should presume to say, that all the Planets are not as well stocked with Inhabitants as the Earth. It is true, Madam, at the Instant you surprized me with your Objections, if you had disputed with me, the Inhabitants of the Planets, I should not only have maintained their Existence, but perhaps likewise have treated on their Creation. We have our Seasons of Credulity, and I never believed these things more firmly than at that Juncture: And even now, and when my Senses are somewhat cooler on the Matter; I cannot help thinking it would be strange that the Earth should be so well peopled, and the other Planets not inhabited at all: For do you believe we discover (as I may say) all the Inhabitants of the Earth? There are as many Kinds of invisible, as visible Creatures; we

we see from the *Elephant* to the very *Pismire*, beyond which our Sight fails us, and yet counting from that minute Creature, there are an infinity of lesser Animals, which would be imperceptible, without the aid of Glasses. We see with Magnifying Glasses that the least Drop of Rain Water, Vinegar, and all other Liquids, are full of little Fishes, or Serpents, which we could never have suspected there; and there is some Reason to believe, that the Tastes which these little Liquids glves, proceeds from the Stingings and Purgency of those little Animals on the Tongue and Palate. Now mingling certain Things with any one of these Liquors, and exposing them in the Sun, or letting them stand and corrupt, will produce a new Species of little Animals.

Several, even of the most solid Bodies, are nothing but an immense swarm of imperceptible Animals, who find for their respective Motions as much room and liberty as they require. Do but consider this small Leaf; why, it is a great World,
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inhabited by little invisible Worms, of a vast extent, what Mountains, what Abysses are there in it? The Insects on one side, know no more of their fellow Creatures on the other, than you and I can tell what they are now doing at the Antipodes: Does it not stand more to reason then, that a great Planet should be inhabited? In the hardest Stones, for Example, in Marble, there are an infinity of Worms, which fill up the *Vacuums*, and feed upon the Substance of the Stone; fancy then Millions of living Creatures to subsist many Years on a Grain of Sand; so that were the Moon but one continued Rock, I would sooner allow her to be gnawed by these invisible Mites, than not to be inhabited: In short every Thing is animated; imagine then those Animals which are yet undiscovered, and add them and those which are but lately discovered, to those we have always seen, you will find the Earth swarms with Inhabitants, and that Nature has so liberally furnished it with

with Animals, that she is not at all concerned for our not seeing above one-half of them: Why then should Nature which is fruitful to an Excess here, be so very barren in the rest of the Planets, as to produce no living Thing in 'em? I must one, *says the Countess*, you have convinced my Reason, but you have confounded my Fancy, with such Variety, that I can't imagine how Nature, which abhors Repetition, should produce so many different Kinds. There is no need of Fancy, Madam, do but trust your Eyes, and you will easily perceive how Nature diversifies in these several Worlds.

All Human Faces, in general, are of the same Model, and yet the *Europeans* and the *Africans* have two particular Moulds, nay, commonly every Family have a different Aspect; what Secret then has Nature to shew so much Variety in the single Face? Our World in respect of the Universe, is but a little Family; all whose Faces have some Resemblance; in another Planet, there

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is another Family, whose Faces have a different Air and make, the Difference too increases with the Distance, for who-soever should see an Inhabitant of the Moon, and an Inhabitant of the Earth, would soon perceive they were nearer Neighbours than one of the Earth, and one of *Saturn*: Here, for Example, we have the use of Voice, in another World they speak by Signs, and at a greater Distance they do not speak at all; here our Reason is formed by Experience, in the next World, Experience contributes but little towards it; and in the next to that, old Men know no more than Children; *here* we are troubled more with what is to come, than with what is past; in the *next* World they are more troubled for what is past, than what is to come; and farther off, they are not concerned with either, which by the Way, I think, is much the better: Here it is thought we want a *Sixth* Sense, which would teach us many Things, of which we are now ignorant; this *Sixth* Sense is apparently

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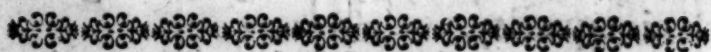
in another World, where they want one of the Five which we enjoy; nay, perhaps there is a much greater Number of Senses, but in the Partition we have made of 'em with the Inhabitants of the other Planets, there are but Five fallen to our Share, with which we are well contented, for want of being acquainted with the rest: Our Sciences have Bounds, which the Wit of Man could never pass; there is a Point where they fail us on a sudden, the rest is reserved for other Worlds, where somewhat which we know is unknown to them. This Planet enjoys the Pleasures of Love, but lies desolate in several Places by the Fury of War; in another Planet they enjoy perpetual Peace, yet in the midst of that Peace, know nothing of Love, and Time lies on their Hands; in a Word, that which Nature practises *here in little*, in distributing her Gifts among Mankind; she does at *large* in *other* Worlds, where she makes use of that admirable Secret she has to diversify all Things, and at the same Time
makes

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makes 'em equal, by compensating for the inequality.

But is it not time, Madam, now to be serious, how will you dispose of all these Notions? Trouble not your self, *says she*, Fancy is a great Traveller; I already comprehend all these Worlds, and form to my self their different Characters and Customs; some of them, I assure you, are very extraordinary; I see at this Moment, a thousand various Figures, tho' I cannot well describe them. O leave them, *replied I*, to your Dreams, we shall know To-morrow whether they represent the Matter faithfully, and what they have taught you, in Relation to the Inhabitants of any of the Planets.





The Fourth Evening's

CONVERSATION.

*Some Particulars concerning the Worlds
of Venus, Mercury, Mars, Jupiter,
and Saturn.*



HE Countess's Dreams were not very successful; they still represented to her, Objects, such as we are acquainted with here on Earth; and I had room to reproach her Ladyship, as those People do us at the Sight of our regular Pictures, who themselves make only wild and grotesque Paintings. Well, say they, this is only an Imitation of Men, there is no manner of Fancy in it. We were therefore forced to conclude our selves ignorant, what sort of Inhabitants all these Planets had, and content our selves only

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only to guess at them, and continue the Voyage we had begun thro' the Worlds.

We were come to *Venus*, and I told her, that Planet certainly turned on it self, though no Body could tell in what Time, and consequently were ignorant how long her Day lasted; but her Year was composed of eight Months, because it is in that Time she turns round the Sun; and seeing *Venus* is forty times less than the Earth, the Earth appears (to them in *Venus*) to be a Planet forty times bigger than *Venus* appears to us on the Earth; and as the Moon is forty times lesser than the Earth, so she seems to be just of the same Magnitude, to the Inhabitants of *Venus*, as *Venus* seems here to us.

I see then, says the Countess, that the Earth is not to *Venus*, what *Venus* is to the Earth; I mean, that the Earth is too big to be the Mother of Love, or the Shepherd's Star to *Venus*; but the Moon which appears to *Venus*, of the same bigness that *Venus* appears to us,

is assigned to be the Mother of Love, and Shepherd's Star to *Venus*; for such Names are only proper for a little brisk airy Planet, bright, and shining as the Goddess herself. O, blessed Moon, how happy art thou to preside over the Amours of those Inhabitants of *Venus*, who must be such Masters of Gallantry! O, doubtless, says I, the very common People of *Venus* are all *Celadons* and *Sylvanders*, and their most trivial Discourses are infinitely finer than any in *Clelia*. Their very Climate inspires Love: *Venus* is much nearer than the Earth is to the Sun, from whence she receives a more vigorous and active Influence.

I find, says the Countess, it is easy enough to guess at the Inhabitants of *Venus*; they resemble what I have read of the *Moors* of *Granada*, who were a little black People, scorched with the Sun, Witty, full of Fire, very Amorous, much inclined to Musick and Poetry, and ever inventing Masques and Turnaments in Honour of their Mistresses.

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Plurality of WORLDS. 103

Pardon me, Madam, *says I*, you are little acquainted with the Planet; *Granada* in all its Glory, was a perfect *Greenland* to it; and your gallant *Moors*, in comparison with that People, were as stupid as so many *Laplanners*.

But what do ye think then of the Inhabitants of *Mercury*? They are yet nearer to the Sun, and are so full of Fire, that they are absolutely Mad; I fancy they have no Memory at all, no more than most of the *Negroes*; that they make no Reflections, and what they do is by sudden Starts, and perfect Hap-hazard; in short, *Mercury* is the Bedlam of the Universe; the Sun appears to them much greater than it does to us, because they are much nearer to it than we; it sends them so vast and strong a Light, that the most glorious Day here, would be no more with them, than a declining Twilight: I know not if any can distinguish Objects; but the Heat to which they are accustomed, is so excessive, that they

would be starved with Cold in the Torrid Zone; their Year is but three Months, but we know not the exact length of their Day, because *Mercury* is so little, and so near the Sun; it is (as it were) lost in his Rays, and is very hardly discovered by the Astronomers; so that they cannot observe how it moves on its Center; but because it is so small, they fancy it compleats its Motion in a little Time; so that by Consequence, the Day there is very short, and the Sun appears to them like a vast fiery Furnace at a little Distance, whose Motion is prodigiously swift and rapid: This is so much the better for them, since it is evident they must long for Night; and during their Night, *Venus* and the Earth (which must appear considerably big) give Light to them: As for the other Planets which are beyond the Earth, towards the Firmament, they appear less to them in *Mercury*, than they do to us here, and they receive but little Light from them, perhaps none at all; the fixed Stars likewise

wife seem less to them, and some of 'em totally disappear, which, were I there, I should esteem a very great loss. I should be very uneasy to see this large *Convex* studded with but few Stars, and those of the least Magnitude and Lustre.

What signifies the loss of a few fixed Stars? *Says the Countess*; I pity them for the excessive Heat they endure; let us give them some relief, and send *Mercury* a few of the refreshing Showers they have sometimes four Months together, in the hottest Countries, during their greatest Extremity. Your Fancy is good, Madam, *replied I*, but we will relieve them another way: In *China* there are Countries which are extremely hot by their Situation; yet, in *July* and *August* are so cold, that the Rivers are Frozen; the Reason is, they are full of *Salt-Petre*, which being exhaled in great abundance, by the excessive heat of the Sun, makes a perfect Winter at Mid-Summer. We will fill the little Planet with *Salt-Petre*, and let the Sun

shine as hot as he pleases. And yet after all, who knows but the Inhabitants of *Mercury* may have no occasion either for Rain, or *Salt-Petre*? If it is a certain Truth, that Nature never gives Life to any Creature, but where that Creature may live; then thro' Custom, and Ignorance of a better Life, those People may live happily.

After *Mercury*, comes the *Sun*; but there is no possibility of Peopling it, nor no room left for a Wherefore. By the Earth which is inhabited, we judge that other Bodies of the same Nature may be likewise inhabited: But the Sun is a Body not like the Earth, or any of the Planets; the Sun is the Source or Fountain of Light, which tho' it is sent from one Planet to another, and receives several Alterations by the way, yet all originally proceeds from the Sun: He draws from himself that precious Substance which he emits from all sides, and which reflects when it meets with a solid Body, and spreads from one Planet to another those long
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and vast Trains of Light which cross, strike thro', and intermingle in a thousand different Fashions, and make (if I may so say,) the richest Tissues in the World. The Sun likewise is placed in the Center, from whence with most Convenience, he may equally distribute and animate by his Heat; it is then a particular Body, but what kind of Body has often puzzled better Heads than mine. It was thought formerly a Body of pure Fire, and that Opinion pass'd current till the beginning of this Age; when they perceived several Spots on its Surface. A little after they had discovered new Planets, (as we shall presently hear of) these some said were the Spots; for those Planets moving round the Sun, when they turned their Dark half to us, must necessarily hide part of it; and had not the Learned with these pretended Planets made their Court before to most of the Princes in *Europe*, giving the Name of this Prince to One, and of that Prince to Another Planet; I believe they would have quarrelled who should be

Master of these Spots, that they might have named them as they pleased.

I cannot approve that Notion; 'twas but the other Day, *says the Countess*, you were describing the Moon, and called several Places by the Names of the most famous Astronomers. I was pleased with the Fancy; for since the Princes have seized on the Earth; it is fit the Philosophers (who are as proud as the best of them) should reserve the Heavens for themselves without any Competitors. Oh! *says I*, Trouble not your self, the Philosophers make the best Advantage of their Territories; and if they part with the least Star, it is on very good Terms; but the Spots on the Sun are fallen to nothing; it is now discovered that they are not Planets, but Clouds, Streams, or Dross, which rise upon the Sun, sometimes in a great Quantity, sometimes in less; sometimes they are dark, sometimes clear, sometimes they continue a great while, and sometimes they disappear as long. It seems the Sun is a Liquid Matter, some
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think of melted Gold, which seems to boil over continually, and by the force of its Motion, casts the Scum or Dross on its Surface, where it is consumed, and others arise. Imagine then what strange Bodies these are, when some of them are as big as the Earth: What a vast quantity must there be of this melted Gold, and what must be the Extent of this great Sea of Light and Fire which they call the Sun? Others say, the Sun appears through their Telescopes, full of Mountains, which vomit Fire continually, and are joined together like Millions of *Aetnas*. Yet there are those who say these burning Mountains are pure Vision, caused by a fault in the Spectacles; but what shall we Credit, if we must distrust our Telescopes, to which we owe the Knowledge of so many new Objects? But let the Sun be what it will, it cannot be at all proper for Habitation; and what pity 'tis, for how Pleasant would it be? You might then be at the Center of the Universe, where you would see all the Planets

Planets turn regularly about you ; but now we know nothing but extravagant Fancies, because we do not stand in the proper Place ; there is but one Place in the World where the Study or Knowledge of the Stars is easily obtained, and what pity it is there is no Body there. You forget your self sure, *says she*, were you in the Sun you would see nothing, neither Planets nor fixed Stars ; does not the Sun efface all ? So that could there be any Inhabitants there, they might justly think themselves the only People in Nature.

I own, *says I*, my Mistake ; I was thinking of the Situation of the Sun, and not of the effect of its Light : I thank you for your Correction ; but must take the boldness to tell you, that you are in an Error, as well as my self ; for were there Inhabitants in the Sun, they would not see at all, either they could not bear the Strength of its Light, or for want of a due distance, they could not receive it ; so that Things well considered, all the People there must

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Plurality of WORLDS. III

must be stark blind, which is another Reason why the Sun cannot be Inhabited; but let us pursue our Voyage. We are now arrived at the Center, which is always the Bottom, or lowest Place of what is round; if we go on, we must ascend; we shall find *Mercury*, *Venus*, the *Earth*, the *Moon*, all the *Planets* we have already visited; the next is *Mars*, who affords nothing Curious that I know of; his Day is not quite an Hour longer than ours, but his Year is twice as much as ours; he is a little less than the Earth, and the Sun seems not altogether so large and so bright to him, as it appears to us: But let us leave *Mars*, he is not worth our stay: But, what a pretty Thing is *Jupiter*, with his Four Moons, or Yeomen of the Guard; they are Four little Planets that turn round him, as our Moon turns round us. But why, *says the Countess*, interrupting me, must there be Planets to turn round other Planets, that are no better than themselves? I should think it would be more regular and uniform, that all the Planets,

Planets, little and great, without any distinction, should have one and the same Motion round the Sun.

Ah, Madam, *says I*, if you did but know what *Descartes's* Whirlpools or Vortexes were (whose Name is terrible, but their Idea pleasant) you would not ask as you do. Must my Head, *says she*, smiling, turn round to comprehend them, or must I become a perfect Fool to understand the Mysteries of Philosophy? Well, let the World say what it will, go on with your Whirlpools. I will, *says I*, and you shall see the Whirlpools are worthy of these Transports: That then which we call a Whirlpool, or Vortex, is a Mass of Matter, whose Parts are separated, or detached from one another, yet have all one uniform Motion; and at the same time, every one is allowed, or has a particular Motion of its own, provided it follows the general Motion: Thus a Vortex of Wind, or Whirlwind, is an infinity of little Particles of Air, which turn round all together, and involve
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whatever they meet with. You know the Planets are borne up by the Celestial Matter, which is prodigiously subtile and active; so that this great Mass, or Ocean of Celestial Matter, which flows as far as from the Sun to the fixed Stars, turns round, and bears the Planets along with it, making them all turn after the same manner round the Sun, who possesses the Center: But in a longer, or a shorter time, according as they are farther or nearer in distance to it; there is nothing to the very Sun, which does not turn, but he turns on himself, because he is just in the middle of this Celestial Matter; and you must know by the way, that were the Earth in his Place, it must turn on it self, as the Sun does. This is the great Vortex, of which the Sun is Lord; yet at the same time, the Planets make little particular Vortexes, in imitation of that of the Sun, each of them in turning round the Sun, does at the same time turn round it self, and makes a certain quantity of Celestial Matter turn round it likewise, which

which is always prepared to follow the Motion the Planet gives it, provided it is not diverted from its general Motion; this then is the particular Vortex of the Planet, which pushes it as far as the strength of its Motion reaches: And if by chance, a lesser Planet falls into the Vortex of a greater Planet, it is immediately borne away by the greater, and is indispenfably forced to turn round it, tho' at the same time, the great Planet, the little Planet, and the Vortex which encloses them, all turn round the Sun: It was thus at the beginning of the World, when we made the Moon follow us, because she was within the reach of our Vortex, and therefore wholly at our disposal: *Jupiter* was stronger, or more fortunate than we, he had Four little Planets in his Neighbourhood, and he brought 'em all Four under his subjection; and no doubt, we, tho' a principal Planet, had had the same Fate, had we been within the Sphere of his Activity; he is ninety times bigger than the Earth, and would certainly

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certainly have swallowed us into his Vortex; we had then been no more than a Moon in his Family, when now we have one to wait on us; so that you see the Advantage of Situation, decides often all our good Fortune.

But pray, *says she*, who can assure us we shall continue as we do now? If we should be such Fools as to go near *Jupiter*, or be so Ambitious as to approach us, what will become of us? For if (as you say) the Celestial Matter is continually under this great Motion, it must needs agitate the Planets irregularly; sometimes drive them together, and sometimes separate 'em. Luck is all, *says I*; we may win as well as lose, and who knows, but we should bring *Mercury* and *Venus* under our Government; they are little Planets, and cannot resist us; but in this Particular, Madam, we need not hope or fear; the Planets keep within their own Bounds, and are obliged as the Kings of *China* were formerly, not to undertake new Conquests. Have you not seen when you
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put Water and Oyl together, the Oyl swims a top; and if to these two Liquors, you add a very little Liquor, the Oyl bears it up, and it will not sink to the Water: But an heavier Liquor, of a just Weight, and it will pass thro' the Oyl, which is too weak to sustain it, and sink till it comes to the Water, which is strong enough to bear it up; so that in this Liquor, composed of two Liquors, which do not mingle, two Bodies of an equal weight, will naturally assume two different Places; the one will never ascend, the other will never descend; if we put still other Liquors, which do not mingle, and throw other Bodies on them, it will be the same Thing: Fancy then that the Celestial Matter which fills this great Vortex, has several resting Places, one by another, whose weight are different, like that of Oyl, Water, and other Liquors; the Planets too are of a different Weight, and consequently every Planet settles in that Place which has a just Strength to sustain and keep it equilibrate; so you

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see it is impossible it should ever go beyond.

I apprehend very well, *says the Countess*, that these Weights keep their Stations regularly. Would to God, our World were as well regulated, and every one among us knew their proper Place. I am now in no fear of being overrun by *Jupiter*; and since he lets us alone in our Vortex, with our Moon, I don't envy him the Four which he has. Did you envy him, *replied I*, you would do him wrong, for he has no more than what he has occasion for; at the distance he is from the Sun, his *Moons* receive, and send him but a very weak Light; it is true, that as he turns upon himself in Ten Hours, his Nights, by consequence, are but Five Hours long; so one would think there is no great occasion for Four Moons, but there are other Things to be considered. Here, under the Poles, they have Six Months Day, and Six Months Night, because the Poles are the two Extremities of the Earth, the farthest removed from those

those Places where the Sun is over 'em in a Perpendicular Line. The Moon seems to keep almost the same Course as the Sun, and if the Inhabitants of the Pole see the Sun during one half of his Course of a Year, and during the other half, do not see him at all; they see the Moon likewise during one half of her Course of a Month; that is, she appears to them Fifteen Days, but they do not see her during the other half. *Jupiter's* Year is as much as Twelve of ours, so that there must be two opposite Extremities in that Planet, where their Night and their Day are Six Years each. A Night Six Years long, is a little disconsolate, and 'tis for that Reason, I suppose, they have Four Moons; that which (in regard to *Jupiter*) is uppermost, finishes its Course about him in Seventeen Days, the Second in Seven, the Third three Days and an half, and the Fourth in two and forty Hours; and tho' they are so unfortunate as to have six Years Night, yet their Course being exactly divided into halves, they never

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never pass above one and twenty Hours, wherein they don't see at least the last Moon, which is a great Comfort in so tedious a Darknes; so that be where you will, these Four Moons are sometimes the prettiest sight imaginable; sometimes they rise all Four together, and then separate according to the inequality of their Course; sometimes they are all in their Meridian, ranged one above another; sometimes you see 'em at equal distances on the Horizon; sometimes when Two rise, the other Two go down. O, how I should love to see their perpetual Sport of Eclipses; for there is not a Day passes, but they Eclipse the Sun, or one another; and they are so accustomed to these Eclipses in that Planet, that they are certainly Objects of Diversion, and not of Fear as with us.

Well, *says the Countess*, I hope you will People these Four Moons, tho' you say they are but little secondary Planets, appointed to give Light to another Planet during its Night. Don't doubt

doubt it, *replied I*, these Planets are not a jot the worse to be inhabited, for being forced to turn round another Planet of greater Consequence. I would have then, *says she*, the People of these Four Moons to be so many Colonies under *Jupiter's* Government; they should, if it were possible, receive their Laws and Customs from him; and consequently render him a kind of Homage, and not view his great Planet without Deference. Would it not be convenient too, *says I*, that they should send Deputies with Addresses to him, to assure him of their Fidelity; for he has certainly a more absolute Command over his Moon, than we have over ours; tho' his Power after all, is but imaginary, and consists chiefly in making them afraid; for that Moon which is nearest to him, sees that he is three Hundred and sixty times bigger than our Moon appears to us; for in truth, he is so much bigger than she; he is also much nearer to them, than our Moon is to us, which makes him ap-

pear

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pear the greater; so that this formidable Planet hangs continually over their Heads, at a very little distance; and if the *Gauls* were afraid heretofore, that the Heavens would fall on them, I think the Inhabitants of that Moon may well be apprehensive that *Jupiter* will at some time or other overwhelm them. I fancy, *says she*, they are possessed with that Fear, because they are not concerned at Eclipses: Every one has their peculiar Folly; we are afraid of an Eclipse, and they, that *Jupiter* will fall on their Heads. It is very true, *says I*, the Inventor of the third System, I told you of i'other Night, the famous *Tycho 'Erache*, (one of the greatest Astronomers that ever was,) did not apprehend the least Danger from an Eclipse, when every Body else was under the greatest Consternation; but what Apprehensions do you think he entertained instead of them? This great Man was so unaccountably superstitious, that if an Hare did but cross him, or an Old Woman bolt upon him at his first coming
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out, he presently looked upon his Journey to be Ominous, shut himself up for that Day, and would not meddle with the least Business. It would be very unreasonable, *replied she*, after such a Man could not redeem himself from the Fear of Eclipses, without falling into some other whimsy as troublesome, that the Inhabitants of that Moon of *Jupiter*, whereof we were talking, should come off upon easier Terms: But we will give them no Quarter; they shall come under the general Rule, and if they are free from one Errour, shall fall into another to put them upon Equivalent: But as I do not trouble myself, because I cannot guess what, pray clear another Difficulty to me, which has given me some Pain for several Minutes. Pray tell me, if the Earth be so little in comparison of *Jupiter*, whether his Inhabitants do discover us? Indeed, I believe not, *says I*; for if we appear to him ninety times less than he appears to us, judge you if there be any possibility: Yet this we may reasonably

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nably conjecture, that there are Astronomers in *Jupiter*, who after they have made the most curious Telescopes, and taken the clearest Night for their Observations, may have discovered a little Planet in the Heavens, which they never saw before; if they publish their discovery, most People know not what they mean, or laugh at them for Fools; nay, the Philosophers themselves will not believe them, for fear of destroying their own Opinions, yet some few may be a little Curious; they continue their Observations, discover the little Planet again, and are now assured it is no Vision; then they conclude it has a Motion round the Sun, and after a thousand Observations, find that it compleats this Motion in a Year; and at last, (thanks to the Learned,) they know in *Jupiter* that our Earth is a World; every Body runs to see it at the end of a Telescope, though so little, that it is scarcely discoverable.

It must be Pleasant, *says she*, to see the Astronomers of both Planets, leveling their Tubes at one another, and mutually asking, what World is that? What People inhabit it? Not so fast neither, *replied I*; for though they may from *Jupiter* discover our Earth, yet they may not know us; that is, they don't in the least suspect it is inhabited; and should any One there chance to have such a Fancy, he might be sufficiently ridiculed, if not prosecuted for it; for my part, I believe they have work enough to make Discoveries on their own Planet, not to trouble their Heads with ours; and it is so large, that if they have any such Thing as Navigation, their *Christopher Columbus* could never want Employment; why, I warrant you, they have not yet discovered the hundredth part of their Planet. But if *Mercury* is so little, they are all (as it were) near Neighbours, and it is but taking a Walk, to go round that Planet. But if we do not appear to 'em in *Jupiter*, they cannot certainly

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Plurality of WORLDS. 125

ly discover *Venus* and *Mercury*, which are much less than the Earth, and at a greater distance; but in lieu of it, they see *Mars*, their own Four Moons, and *Saturn* with his; this I think is work enough for their Astronomers; and Nature has been so kind to conceal from them the rest of the Universe.

Do you think it a Favour then, *says she*? Yes certainly, *replied I*, for there are sixteen Planets in this great Vortex: Nature saves us the trouble of studying the Motions of them all, and shows us but Seven, which I think is very obliging, though we know not how to value the Kindness, for we have recovered the other Nine which were hid from us, and so render the Science of Astronomy much more Difficult than Nature designed it.

If there are sixteen Planets, *says she*, *Saturn* must have five Moons. It is very true, *replied I*, and two of these five are but lately discovered; but there is somewhat that is more remarkable, since his Year is thirty of ours, and

there are consequently in him some Countries, where their Night is fifteen Years long; what can you imagine Nature has invented to give Light, during so dreadful a Night? Why, she has not only given *Saturn* five Moons, but she has encompassed him round with a great Circle or Ring; this being placed beyond the reach of the Shadow, which the Body of that Planet casts, reflects the Light of the Sun continually on those Places where they cannot see the Sun at all.

I protest, *says the Countess*, this is very surprizing, and yet all is contrived in such great Order, that it is impossible not to think, but Nature took Time to consider the Necessities of all Animate Beings, and that the disposing of these Moons was not a work of Chance; for they are only divided among those Planets which are farthest distant from the *Sun*, the *Earth*, *Jupiter*, *Saturn*; indeed it was not worth while to give any to *Mercury* or *Venus*, they have too much Light already; and they ac-

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count their Nights (as short as they are) a greater Blessing than their Day. But pray, why has not *Mars* a Moon too? It seems he has none, tho' he is much farther than the Earth from the Sun. It is very true, *says I*; no doubt but he has other helps, tho' we do not know them: You have seen the *Phosphorus*, both liquid and dry, how it receives and imbibes the Rays of the Sun, and what a great Light it will cast in a dark Place: Perhaps *Mars* has many great high Rocks, which are so many Natural *Phosphorus*'s, which in the Day take in a certain provision of Light, and return it again at Night. What think you, Madam, is it not very Pleasant, when the Sun is down, to see those lighted Rocks, like so many glorious Illuminations, made without any Art, and which can do no manner of Hurt by their Heat? Besides, there is a Species of Birds in *America*, who reflect such a Light, that, you may read by it in the darkest Night; and who knows but *Mars* may have great Flocks

of these Birds, that as soon as it is Night, disperse themselves into all Parts, and spread from their Wings another Day.

I am not at all contented, *says she*, either with your Rocks, or your Birds; it is a pretty Fancy indeed, but it signifies that there should be *Moons* in *Mars*, since Nature has given so many to *Saturn* and *Jupiter*, and if all the other Worlds that are distant from the *Sun*, have *Moons*, why should *Mars* only be excepted? Ah, Madam, *says I*, when you are a little more dipp'd in Philosophy, you will find Exceptions in the very best Systems; there are always some Things that agree extremely well, but then there are others that do not accord at all, those you must leave as you found them, if ever you intend to make an End: We will do so by *Mars*, if you please, and say no more of him, but return to *Saturn*. What d'ye think of this great Ring, in the Form of a Semi-Circle, that reaches from one End of the Horizon to the other, which reflecting the Light of the Sun, performs
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the Office of a continual Moon? And must we not inhabit this Ring too, *says she*, smiling? I confess, *says I*, in the humour I am in, I could almost send Colonies every where; and yet I cannot well plant any there, it seems so irregular a Habitation; but for the five little Moons, they cannot chuse but be inhabited; tho' some think this Ring is a Circle of Moons, which follow close to one another, and have an equal Motion; and that the five little Moons fell out of this Circle; how many Worlds are there then in the Vortex of *Saturn*? But let it be how it will, the People in *Saturn* live very miserably: It is true, this Ring gives Light to them, but it must be a very poor one, when the Sun seems to them but a little pale Star, whose Light and Heat cannot but be very weak at so great a Distance; they say *Greenland* is a perfect *Bagnio* in comparison of that Planet, and that they would expire with Heat in our coldest Countries.

You give me, *says she*, such an Idea of *Saturn*, that makes me shake with Cold, and that of *Mercury*, puts me into a Fever. It cannot be otherwise, *replied I*, for the two Worlds, which are the Extremities of this great Vortex, must be opposite in all Things. They must then, *says she*, be very wise in *Saturn*, for you told me they were all Fools in *Mercury*. If they are not wise, *says I*, yet they have all the Appearances of being very Flegmatick: They are People that know not what it is to laugh, they take a Days time to answer the least Question you can ask them; and are so very grave, that were *Gato* living among them, they would think him a *Merry-Andrew*.

It is odd to consider, *says she*, that the Inhabitants of *Mercury* are all Life, and the Inhabitants of *Saturn* quite contrary; but among us some are brisk, and some are dull; it is, I suppose, because our Earth is placed in the Middle of the other Worlds, and so we participate of both Extreame, there is no
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fixed or determinate Character; some are made like the Inhabitants of *Mercury*, others like those of *Saturn*; we are a Mixture of the several Kinds that are found in the rest of the Planets. Why, *says I*, do not you approve of the Idea? Methinks it is pleasant to be composed of such a fantastical Assembly, that one would think we were collected out of different Worlds; we need not travel, when we see the other Worlds in Epitome at home.

I am sure, *says the Countess*, we have one great Convenience in the Situation of our World; it is not so hot as *Mercury* and *Venus*, nor so cold as *Jupiter* or *Saturn*; and our Country is so justly placed, that we have no Excess either of Heat or Cold. I have heard of a Philosopher, who gave Thanks to Nature that he was born a Man and not a Beast, a Greek and not a *Barbarian*; and for my Part, I render Thanks that I am seated in the most temperate Planet of the Universe, and in one of the most temperate Regions of that Planet.

You have more Reason, *says I*, to give Thanks that you are Young and not Old; that you are Young and Handsom, and not Young and Ugly; that you are Young, Handsom, and a *French* Woman, and not Young, Handsom, and an *Italian*; these are other-guess Subjects for your Thanks, than the Situation of your Vortex, or the Temperature of your Country.

Pray Sir, *says she*, let me give Thanks for all Things, to the very Vortex in which I am planted: Our Proportion of Happiness is so very small, that we should lose none, but improve continually what we have, and be grateful for every Thing, tho' never so common or inconsiderable. If nothing but exquisite Pleasure will serve us, we must wait a long time, and be sure to pay too dear for it at last. I wish, *says I*, that Philosophy was the Pleasure you propose, that when you think of Vortexes you would not forget an humble Servant of your Ladyships. I esteem it a Pleasure, *answered the Countess*, while it
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diverts me with something new, but no longer. I will engage for it till To-morrow, *replied I*, for, the *fixed Stars* are beyond whatever you have yet seen.



The Fifth Evening's CONVERSATION.

That the fixed Stars are so many Suns, every one of which gives Light to a World.



HE Countess was very impatient to know what would become of the *fixed Stars*; are they Peopled, *says she*, as the Planets are, or are they not inhabited at all, or in short, what shall we do with them? You may soon guess, *says I*, the *fixed Stars* cannot be less distant from the Earth than Fifty Millions of Leagues; nay, if you anger an Astro-

nomer,

nomer, he will set them farther. The Distance from the *Sun* to the farthest *Planet*, is nothing in Comparison of the Distance from the *Sun*, or from the *Earth*, to the *fixed Stars*, it is almost beyond Arithmetick. You see their Light is bright and shining, and did they receive it from the *Sun*, it must needs be very weak after a Passage of Fifty Millions of Leagues; then judge how much it is wasted by Reflexion, for it comes back again as far to us, so that forwards and backwards, here are an Hundred Millions of Leagues for it to pass, and it is impossible it should be so clear and strong as the Light of a fixed Star, which cannot but proceed from it self; so that in a Word, all the *fixed Stars* are Luminous Bodies in themselves, and so many *Suns*.

I perceive, *says the Countess*, where you would carry me; you are going to tell me, that if the fixed Stars are so many Suns, and our Sun the Center of a Vortex that turns round him, why may not every fixed Star be the Center
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of a Vortex that turns round the fixed Star? Our Sun enlightens the Planets; why may not every fixed Star have Planets to which they give Light? You have said it, *replied I*, and I will not contradict you.

But you have made the Universe so large, *says she*, that I know not where I am, or what will become of me; what is it all to be divided into Vortexes confusedly, one among another? Is every Star the Center of a Vortex, as big as ours? Is that vast Space which comprehends our Sun and Planets, but an inconsiderable Part of the Universe? And are there as many such Spaces, as there are fixed Stars? I protest it is dreadful, the Idea confounds and over-powers me. And for my Part, *replied I*, it gives me Satisfaction; when the Heavens were a little blue Arch, stuck with Stars, methought the Universe was too strait and close, I was almost stifled for want of Air; but now it is enlarged in Heighth and Breadth, and a Thousand and a Thousand Vortexes

texes taken in; I begin to breathe with more Freedom, and think the Universe to be incomparably more magnificent than it was before. Nature has spared no Cost, even to Profuseness, and nothing can be so glorious, as to see such a prodigious Number of Vortexes, whose several Centers are possessed by a particular Sun, which makes the very Planets turn round it. The Inhabitants of a Planet of one of these innumerable Vortexes, see on all sides these luminous Centers of the Vortex, with which they are encompassed; but perhaps they do not see the Planets, who receiving but a faint Light from their Sun, cannot send it beyond their own World.

You present me with a Prospect of so vast a Length, that no Eye can reach to the End of it: I plainly see the Inhabitants of the Earth, and you have made me discover those who dwell in the Moon, and in other Planets of our Vortex; these Inhabitants indeed I conceive pretty plainly, but I do not see 'em so clearly as those of the Earth:

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Plurality of WORLDS. 137

Earth: After these we come to the Inhabitants of the Planets which are in the other Vortexes, but they are sunk into so great a Depth, that tho' I do all I can to see them, yet I must confess I can hardly perceive them; by the Expression you use in speaking of them, they seem to be almost annihilated; you ought then to call them the Inhabitants of one of those innumerable Vortexes: We our selves, for whom the same Expression serves, must confess, that we scarce know where we are, in the Midst of so many Worlds; for my own Part, I begin to see the Earth so fearfully little, that I believe from henceforth, I shall never be concerned at all for any Thing; that we so eagerly desire to make our selves Great, that we are always designing, always troubling and harassing our selves, is certainly because we are ignorant what these Vortexes are; but now I hope my new Lights will in part justify my Laziness, and when any one reproaches me with my Indolence, I will answer, *Ab, did*
you

you but know what the fixed Stars are! It was not fit, *says I*, that *Alexander* should know what they were; for a certain Author who maintains that the Moon is inhabited, very gravely tells us, that *Aristotle* (from whom no Truth could be long concealed) must necessarily be of an Opinion, backed with so much Reason; but yet he never durst acquaint *Alexander* with the Secret, lest he should run mad with Despair, when he knew there was another World which he could not conquer: With much more Reason then was this Mystery of Vortexes and fixed Stars, kept secret in *Alexander's* Time, for tho' they had been known in those Days, yet it had been but an ill Way of making his Court to have said any thing of them to that ambitious Prince; for my Part, I that know them, am not a little troubled to find my self not one jot the wiser for all the Knowledge I have of them; the most they can do according to your Way of Reasoning, is but to cure People of their Ambition, and

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Plurality of WORLDS. 139

and their unquiet restless Humour, which are Diseases I am not at all troubled with; I confess I am guilty of so much Weakness, as *to be in Love with what is Beautiful*; that's my Distemper, and I am confident the Vortexes can never cure it: what if the other Worlds render ours so very little? They cannot spoil fine Eyes, or a pretty Mouth, their Value is still the same, in spite of all the Worlds that can possibly exist.

This Love, *replied the Countess*, smiling, is a strange Thing; let the World go how it will, it is never in Danger; there is no System can do it any harm. But tell me freely, is your System true? Pray conceal nothing from me; I will keep your Secret very faithfully; it seems to have for its Foundation, but a slight Probability, which is, that if a fixed Star be in it self a Luminous Body, like the Sun, then by consequence, it must, as the Sun is, be the Center and Soul of a World; and have its Planets turning round about it: But is there an
absolute

absolute necessity it must be so? Hear me, Madam, *says I*, since we are in the humour of mingling Amorous Follies with our most serious Discourse, I must tell you, that in Love and the Mathematicks, People reason alike: Allow never so little to a Lover, yet presently after you must grant him more; nay, more and more; which will at last go a great way: In like manner, grant but a Mathematician one little Principle, he immediately draws a Consequence from it, to which you must necessarily assent; and from this Consequence another, till he leads you so far (whether you will or no) that you have much ado to believe him. These two sorts of People, Lovers and Mathematicians, will always take more than you give them. You grant, that when two things are like one another in all visible respects, it is possible they may be like one another in those Respects that are not visible, if you have not some good Reason to believe otherwise: Now this way of arguing have I made use of. The Moon, *says I*, is inhabited,

Plurality of WORLDS. 141

inhabited, because she is like the Earth; and the other Planets are inhabited, because they are like the Moon; I find the fixed Stars to be like our Sun, therefore I attribute to them what is proper to that: You are now going too far to be able to retreat, therefore you must go forward with a good Grace. But, *says the Countess*, if you build upon this Resemblance, or Likeness, which is between our Sun and the fixed Stars, then, to the People of another great Vortex, our Sun must appear no bigger than a small fixed Star, and can be seen only when it is Night with them. Without doubt, Madam, *says I*, it must be so: Our Sun is much nearer to us, than the Suns of other Vortexes, and therefore its Light makes a much greater Impression on our Eyes than theirs do: We see nothing but the Light of our own Sun; and when we see that, it darkens and hinders us from seeing any other Light; but in another great Vortex, there is another Sun, which rules and governs; and, in its turn, extinguishes the

the Light of our Sun, which is never seen there but in the Night, with the rest of the other Suns, that is, the fixed Stars; with them our Sun is fastened to the great arched Roof of Heaven, where it makes a part of some *Bear* or *Bull*: For the Planets which turns round about it, (our Earth for Example) as they are not seen at so vast a Distance, so no Body doth so much as dream of them: All the Suns then are Day Suns in their own Vortexes, but Night Suns in other Vortexes: In his own World or Sphere every Sun is single, and there is but one to be seen; but every where else, they serve only to make a Number. May not these Worlds, *replied the Countess*, notwithstanding this great Resemblance between them, differ in a Thousand other Things; for tho' they may be alike in one Particular, they may differ infinitely in Others. It is certainly true, *says I*; but the Difficulty is to know wherein they differ. One Vortex has many Planets that turn round about its Sun; another Vortex

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Plurality of WORLDS. 143

Vortex has but a few: In one Vortex, there are inferior or less Planets, which turn about those that are greater; in another perhaps, there are no inferior Planets; here, all the Planets are got round about their Sun, in form of a little Squadron; beyond which, is a great void Space, which reaches to the Neighbouring Vortexes: In another Place, the Planets take their Course towards the outside of their Vortex, and leave the middle void. There may be Vortexes also quite void, without any Planets at all; others may have their Sun not exactly in their Center; and that Sun may so move, as to carry its Planets along with it: Others may have Planets, which in regard of their Sun, ascend, and descend, according to the change of their Equilibration, which keeps them suspended. In short, what Variety can you wish for? But, I think, I have said enough for a Man that was never out of his own Vortex.

It is not so much, *replied the Countess*, considering what a Multitude of Worlds

Worlds there are; what you have said is sufficient for five or six, and from hence I see Thousands.

What would you say, Madam, if I should tell you, there are many more fixed Stars than those you see? And that an infinite Number are discovered with Glasses, which are not Perceptible to our Eye-sight: In only one Constellation, where, it may be, we count twelve or fifteen, there are as many to be found as usually appear in the whole Hemisphere.

I submit, *says the Countess*, and beg your Pardon: You quite confound me with Worlds and Vortexes. O, Madam, I have a great deal more to tell ye, *replied I*, you see that whiteness in the Sky, which some call the *Milky-way*; can you imagine what That is? It is nothing but an infinity of small Stars, not to be seen by our Eyes, because they are so very little; and they are sown so thick, one by another, that they seem to be one continued Whiteness: I wish you had a Glass, to see
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this *Ant-Hill* of Stars, and this *Cluster* of *Worlds*, if I may so call them: They are in some sort, like the *Maldivy* Islands: Those twelve thousand Banks of Sand, separated only by narrow Channels of the Sea, which a Man may as easily leap over as a Ditch: So near together are the Vortexes of the *Milky-way*, that I presume, the People in one World, may talk, and shake Hands with those of another; at least I believe the Birds of one World, may easily fly into the other; and that Pigeons may be trained up to carry Letters, as they do in the *Levant*. These little Worlds are excepted out of that general Rule, by which one Sun in his own Vortex, as soon as he appears, effaces the Light of all other foreign Suns: If you were in one of these little Vortexes of the *Milky-way*, your Sun would not be much nearer to you, and consequently, would not make any much more sensible Impression on your Eyes, than a hundred Thousand other Suns of the neighbouring Vortexes: You would

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then see your Heaven shine bright with an infinite Number of Fires, close to one another, and but a little distant from you; so that tho' you should lose the Light of your own particular Sun, yet there would still remain visible Suns enough beside your own, to make your Night as light as Day, at least, the difference would hardly be perceived; for the Truth is, you would never have any Night at all: The Inhabitants of these Worlds, accustomed to perpetual Brightness, would be strangely astonished, if they should be told that there are a miserable sort of People, who, where they live, have very dark Nights, and when it is Day with them, they never see more than one Sun; certainly they would think Nature had very little Kindness for us, and would tremble with Horrour, to think what a sad Condition we are in.

I do not ask you, *says the Countess*, whether in those Worlds of the *Milky-way*, there are any Moons; I see they would be of no use to those principal Planets

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Plurality of WORLDS. 147

Planets which have no Night, and move in Spaces too strait and narrow to cumber themselves with the Baggage of inferiour Planets : Yet pray take Notice, that by your liberal Multiplication of Worlds, you have started an Objection, not easily answered : The Vortexes whose Suns we see, touch the Vortex in which we are; and if it be true, that Vortexes are round, how then can so many Bowls, or Globes all touch one single one? I would fain imagine how this may be done, but cannot reconcile it to my self.

Madam, *says I*, you shew a great deal of Wit, in raising this Doubt, and likewise in not being able to resolve it; for in itself the Thing is extreme Difficult, and in the same manner you conceive it, no answer can be given to it; and he must be a Fool, who goes about to find Answers to Objections which are unanswerable. If our Vortex had the form of a Dye, it would have six Squares or flat Surfaces, and would be far from being round; and upon every

one of these Squares, might be placed a Vortex of the same Figure ; but if instead of these six Squares, it had Twenty, Fifty, or a Thousand ; then might a thousand Vortexes be placed upon it, one upon every Flat ; and, you know very well, that the more flat Faces any Body has on its outside, the nearer it approaches to Roundness, just as a Diamond cut Face-wise on every side, if the Faces be very many and little, it will look as round as a Pearl of the same Bigness: 'Tis in this manner, that the Vortexes are round ; they have an infinite Number of Faces on their outside, and every one of 'em has upon it another Vortex ; these Faces are not all equal and alike ; but here, some are greater, and there, some less: The least Faces of our Vortex, for Example, answer to the *Milky-way*, and sustain all those little Worlds. When two Vortexes are supported by the two next Flats on which they stand, if they leave beneath any void Space between them, as it must often happen, Nature, who is

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an excellent Housewife, and suffers nothing to be useless, presently fills up this void Space with a little Vortex or two, perhaps with a Thousand, which never incommode the others, and become one, two, or a thousand Worlds more; so that there may be many more Worlds than our Vortex has flat Surfaces to bear 'em: I will lay a good Wager, that tho' these little Worlds were made only to be thrown into the Corners of the Universe, which otherwise would have been void and useless; and tho' they are unknown to other Worlds which they touch, yet they are well satisfied with their being what they are: These are the little Worlds, whose Suns are not to be discovered but with a Telescope, and whose Number is prodigious: To conclude, all these Vortexes are joined to one another in so admirable a manner, that every one turns round about his Sun, without changing Place; every one has such a turn as is most easy, and agreeable to its own Situation: They take hold of one another,

ther, like the Wheels of a Watch, and mutually help one another's Motion : And yet 'tis true, that they act contrary to one another. Every World, as some say, is like a Foot-Ball, made of a Bladder, covered with Leather, which sometimes swells of its own accord, and would extend it self, if it were not hindered. But this swelling World being pressed by the next to it, returns to its first Figure ; then swells again, and is again depressed ; and some affirm, that the Reason why the fixed Stars give a twinkling and trembling Light, and sometimes seem not to shine at all, is because their Vortexes perpetually push and press our Vortex, and ours again continually repulses theirs.

I am in love with these Fancies, *says the Countess* ; I am pleased with these Foot-Balls, which swell every Moment, and sink again, and with these Worlds, which are continually striving and pushing one another : But above all, I am pleased to see how this jostling keeps up the Trade of Light, which is certainly
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the only Correspondence that is between them.

No, no, Madam, *says I*; Light is not their sole Commerce; the neighbouring Worlds sometimes pay visits to us, and that in a very magnificent and splendid manner: Comets arrive from thence, adorned with bright shining Hair, Venerable Beards, and Majestick Tails; these, *says the Countess*, are Embassadors, whose visits may be well spared, since they serve only to fright us. They scare only Children, *says I*, with their extraordinary Train; but indeed, the Number of such Children is now a-days very great. Comets are nothing but Planets, which belong to a Neighbouring Vortex, they move towards the out-side of it; but perhaps this Vortex being differently pressed by those Vortexes which encompass it above, it is rounder than below, and the lower Part is still towards us. These Planets which have begun to move in a Circle above, are not aware, that below their Vortex will fail them, because it is

as it were broken. Therefore, to continue the circular Motion, it is necessary that they enter into another Vortex, which we will suppose is ours, and that they cut through the outsides of it. They appear to us very high, and are much higher than *Saturn*; and according to our System, it is absolutely necessary they should be so high, for Reasons that signify nothing to our present Subject. From *Saturn* downwards to the other side of our Vortex, there is a great void Space without any Planets. Our Adversaries often ask us, to what purpose this void Space serves? But let them not trouble themselves any more, I have found a use for it. It is the Apartment of those strange Planets, which come into our World.

I understand you, *says she*, we do not suffer them to come into the Heart of our Vortex, among our own Planets, but we receive them as the *Grand Seigneur* does the Embassadors that are sent to him; he will not shew them so much Respect as to let them reside within the
Walls

Plurality of WORLDS. 153

Walls of *Constantinople*, but Quarters them in one of the Suburbs of the City : Madam, *says I*, we, and the *Ottomans* agree likewise in this, that as they receive Embassadours, but never send any, so we never send any of our Planets into the Worlds that are next us.

But this, *says she*, it appears that we are very proud; however, I do not yet very well know what I am to believe. These foreign Planets with their Tails and their Beards have a terrible Countenance, it may be they are sent to affront us; but ours that are of another Make, if they should get into other Worlds, are not so proper to make People afraid.

Their Beards and their Tails, Madam, *says I*, are not real, they are *Phænomena*, and but mere Appearances. These foreign Planets differ in nothing from ours; but entring into our Vortex, they seem to us to have Tails or Beards, by a certain sort of Illumination which they receive from the Sun, and which has not been yet well explained. But

'tis certain, that is but a kind of Illumination, and when I am able I will tell you how 'tis done. I wish then, *says she*, that our *Saturn* would go take a Tail and a Beard in another Vortex, and fright all the Inhabitants of it. That done, I would have him come back again, leaving his terrible Accoutrements behind him, and taking his usual Place amongst our other Planets, fall to his ordinary Business. 'Tis better for him, *says I*, not to go out of our Vortex. I have told you how rude and violent the Shock is, when two Vortexes jostle one another, a poor Planet must needs be terribly shaken, and its Inhabitants in no better Condition. We think our selves very unhappy when a Comet appears, but it is the Comet that is in an ill Case. I do not believe that, *says she*, it brings all its Inhabitants with it in very good Health; there can be nothing so diverting as to change Vortexes. We that never go out of our own Sphere lead but a dull Life; if the Inhabitants of a Comet had but the

Plurality of WORLDS. 155

the Wit to foresee the Time when they are to come into our World, they who had already made the Voyage, could tell their Neighbours beforehand what they would see, they could tell them, that they would discover a Planet with a great Ring about it, meaning our *Saturn*; they would also say, you shall see another Planet which has four little ones to wait on it; and perhaps some of them, resolved to observe the very Moment of their entring into our World, would presently cry out, *A new Sun, a new Sun*, as Sailors use to cry *Land, Land*.

You have no reason then, *says I*, to pity the Inhabitants of a Comet, yet I suppose you will think their Condition lamentable, that inhabit a Vortex whose Sun comes in Time to be quite extinguished, and consequently who live in Eternal Night. How, *cried the Countess*, can Suns be extinguished? Yes, without doubt, *says I*, for People some thousand Years ago saw fixed Stars in the Sky, which are now no more to be

seen; these were Suns which have lost their Light, and certainly there must be a strange Desolation in their Vortexes, and a general Mortality over all the Planets, for what can People do without a Sun? This is a dismal Fancy, *says the Countess*, I would not, if I could help it, let it come into my Head, I will tell you, if you please, *replied I*, what is the Opinion of Learned Astronomers as to this Particular: They think that the fixed Stars which have disappeared, are not quite extinguished, but that they are half Suns, that is, they have one half Dark, and the other half Light, and turning round upon their own Axis or Center, they sometimes shew us their Light side, and afterwards turning to us their Dark side, we see them no more. To oblige you, Madam, I will be of this Opinion, because it is not so harsh as the other, tho' I cannot make it good but in relation to some certain Stars, because as some have lately observed, those Stars have their regulated times of appearing, and disappearing, otherwise

wife there could be no such things as half Suns. But what shall we say of Stars, which totally disappear, and never shew themselves again after they have finished their Course of turning round upon their own Axis? You are too just, Madam, to oblige me to believe that Stars are half Suns. However, I will try once more what I can do in favour of your Opinion: The Suns are not extinct, they are only sunk so low into the immense depth of Heaven, that we cannot possibly see them; in this Case, the Vortex follows his Sun, and all is well again. It is true that the greatest Part of the fixed Stars have not this Motion, by which they remove themselves so far from us, because at other times they might return again nearer to us, and we should see them sometimes greater, and sometimes less, which never happens. But we will suppose that none but the little Light, and most active Vortexes which slip between the others, make certain Voyages, after which they return again
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while the main Body of Vortexes remain unmoved. It is likewise very strange that some fixed Stars shew themselves to us, spending a great deal of time in appearing, and disappearing, and at last, totally and entirely disappear. Half Suns would appear again at their set and regulated Time. But Suns, which should be sunk low into the depths of Heaven, would disappear but once, and not appear again for a vast space of Time. Now, Madam, declare your Opinion boldly: Must not these Stars, of necessity be Suns, which are so much darkned, as not to be visible to us, yet afterwards shine again, and at last are wholly extinct? How can a Sun, *says the Countess*, be darkned and quite extinguished, when it is in its own Nature a Foundation of Light? It may be done, Madam, *says I*, with all the Ease in the World, if *Descartes's* Opinion be true, that our Sun has Spots; now whether these Spots be Scum or thick Mists, or what you please, they may thicken and unite, till at last they
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cover the Sun with a Crust, which daily grows thicker, and then farewell Sun. We have hitherto scaped pretty well; but it is said, that the Sun for some whole Years together has looked very pale; for Example, the Year after *Cæsar's* Death; it was this Crust that then began to grow, but the Force of the Sun broke through, and dissipated it; had it continued, we had been all lost People. You make me tremble, *replied the Countess*, and now I know the fatal Consequences of the Sun's Paleness, I believe instead of going every Morning to the Glass, to see how I look my self, I shall cast my Eyes up to Heaven, to see whether or no the Sun looks pale. Oh, Madam, *says I*, there is a great deal of Time required to ruin a World. I grant it, *says she*, yet it is but Time that is required. I confess it, *says I*, all this immense Mass of Matter that composes the Universe, is in perpetual Motion, no Part of it excepted; and since every Part is moved, you may be sure that Changes must happen

happen sooner or later ; but still in times proportioned to the Effect. The Ancients were pleasant Gentlemen, to imagine that the *Celestial Bodies* where, in their own Nature unchangeable, because they observe no Alteration in them ; but they did not live long enough to confirm their Opinion by their own Experience ; they were Boys in comparison of us. Give me leave, Madam, to explain my self by an Allegory : If Roses, which last but a Day, could write Histories, and leave Memoirs one to another, and if the first Rose should draw an exact Picture of his Gardiner, and after fifteen Thousand Rose-Ages, it should be left to other Roses, and so on still to those that should succeed, without any change in it ; should the Roses hereupon say, we have every Day seen the same Gardiner, and in the Memory of Roses, none ever saw any Gardiner but this ; he is still the same he was, and therefore certainly he will die, as we do, for there is no Change at all in him. Would not these Roses,
Madam,

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Madam, talk very foolishly? And yet there would be more reason in their Discourse, than there was in what the Ancients said concerning *Celestial Bodies*; and though even to this very Day there should appear no visible Change in the Heavens, and the Matter, of which they are made, should have all the Signs of an Eternal Duration, without any Change; yet I would not believe them unchangeable, till I had the Experience of many more Ages. Ought we, whose Lives are but *a Span long* to make our Continuance the mensurate Duration of any other Being? It is not so easy a matter to be Eternal, To have lasted many Ages of Men, one after another, Is no Sign of Immortality. Truly, *says the Countess*, I find these Worlds are far from being able to pretend to it; I will not do them so much Honour, as to compare them to the Gardiner that lived so much longer than the Roses: I begin to think them like the Roses themselves, which blow one Day, and die the next: For now I understand,

stand, that if old Stars disappear, new ones will come in their Room, because every Species must preserve it self. No Species, Madam, *says I*, can totally perish; some perhaps will tell you that such new Stars are Suns, which return to our Sight again, after they have been a long Time hid from us, in the Profundity of Heaven: Others may tell you they are Suns cleared from that thick Crust, which once covered them: If I should think all this possible, yet I likewise believe that the Universe may be framed in such a Manner, that from time to time it may produce new Suns; why may not that Matter which is proper to make a Sun, be dispersed here and there, and gather it self again at long run, into one certain Place, and lay the Foundation of a New World? I am very much inclined to believe such new Productions, because they suit with that Glorious and Admirable Idea which I have of the Works of Nature. Can we think that wise Nature knows no more than the Secret of making

Herbs

Plurality of WORLDS. 163

Herbs and Plants live and die by a continual Revolution? I am verily persuaded, and are not you so too, Madam, that Nature, without much Cost or Pains, can put the same Secret in Practice upon the Worlds? I now find, *says the Countess*, the Worlds, the Heavens, and celestial Bodies so subject to change, that I am come to my self again. To recover our selves the better, *replied I*, let us say no more of these Matters. We are arrived at the very Roof and Top of all the Heavens; and to tell you whether there be any Stars beyond it, you must have an abler Astronomer than I am; you may place Worlds there, or no Worlds, as you please: It is the Philosopher's Empire to describe those vast invisible Countries, which are, and are not, or are such as he pleases to make them: It is enough for me to have carried your *Mind*, as far as you can see with your Eyes.

Well now, *says the Countess*, I have the *System* of the *Universe* in my Head; How learned am I become? Indeed, Madam,

Madam, *says I*, you are pretty knowing, and with this Advantage, either of believing or disbelieving any thing I have said; all the Recompence I desire for the Pains I have taken, is, that you would never look upon the *Sun*, the *Heaven*, or the *Stars*, without thinking on *Me*.



The Sixth Evening's CONVERSATION.

Some New Observations which confirm those in the preceding Conversations; and, several late Discoveries which have been made in the Heavens.



It was a considerable Time since the Countess and I had any Talk of the *Planetary Worlds*; and it was so long indeed, that we began to forget we ever had held any Arguments on that Subject.

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Subject. When I went one Day to Visit her, I came in just as two Gentlemen of Wit and Character in the World had taken their leaves of her. Well! *says she*, the very Moment she perceived me, you see who have honoured me with a Visit; and, I protest, it has given me some room to suspect that it has been in your Power to impose upon my Judgment. I should be very proud, Madam, *replied I*, if I could flatter my self with such a Power, because I look upon it to be the hardest Task any one could attempt. As hard as it is, *says the Countess*, I am afraid you have done it. I do not know how it came about, but our Conversation turned upon the *Plurality of Worlds* with my two Friends who are just gone: I am not certain, but they might introduce the Discourse with a malicious Design. I made no scruple to tell them directly, that all the Planets were Inhabited; one of them replied, he was very well satisfied I did not believe a Word of it, and I with all the Simplicity imaginable maintained,

maintained, that it was my real Opinion; he still looked upon it as a Piece of Dissimulation designed to divert the Company: And I thought what made him so positive that I did not believe my own Sentiments was, that he had too high an Opinion of me to conceive that I could entertain so extravagant a Notion. As for the other Gentlemen, who had not altogether that Esteem for me, they took me at my Word. For God's sake, why did you put a Thing in my Head, which People that value me cannot think I maintain seriously? Nay, Madam, *says I*, but why would you maintain it seriously among a set of People, who, I am sure, never entered into a way of Reasoning which had the least cast of Seriousness? Must we intrust the Inhabitants of the Planets so highly? We should content ourselves with being a little select Number of *Advocates* for them, and not communicate our *Mysteries* to the *Vulgar*. How! *says the Countess*, do you call my two last Visitants the *Vulgar*?

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Plurality of WORLDS. 167

They may have Wit enough, *says I*, but they never Reason at all. And your Reasoners, who are a severe set of People, will make no Difficulty of sorting them with the Vulgar. On the other Side, these Men of Fire revenge themselves by ridiculing the Reasoners; and think it is a very just Principle in Nature, that every Species despises what it wants. It were right, if it was possible, to conform our selves to every Species; and it had been much better for you to have rallied on the Inhabitants of the Planets with your two Friends, because they are better Rail- lery than Reasoning, which they never make Use of: You had then come off with their joint Esteem; and the Pla- nets had not lost a single Inhabitant by it. Would you have had me sacrifice the Truth to a Jest! *replied the Coun- tess*: And is that all the Conscience you have? I own to you, *says I*, that I have no great Zeal for these sorts of Truths, and I will sacrifice them with all my Soul to the last Conveniencies of
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Company. For Instance, I see what is, and always will be, the Reason, why the Opinion of the Planets being Inhabited, is not received so probable as it really is: The Planets always present themselves to our View as Bodies which emit Light; and not at all like great Plains and Meadows. We should readily agree that Plains and Meadows were Inhabited; but for Luminous Bodies to be so too, there is no Ground to believe it. Reason may come and tell us over and over, that there are Plains and Meadows in these Planets, but Reason comes a Day too late; one Glance of our Eyes has had its Effect before her, we will not hear a Word she says, the Planets must be Luminous Bodies, and what sort of Inhabitants should they have? Our Imagination of Course would presently represent their Figures to us, it is what she cannot do, and the shortest Way is to believe there are no such Beings. Would you have me for the Establishment of these Planetary People, whose Interests are far from touching

touching me, go to attack those formidable Powers, called Senses and Imagination? It is an Enterprize would require a good Stock of Courage, and we cannot easily prevail on Men, to substitute their Reason in the Place of their Eyes. I sometimes meet with reasonable People enough, who are willing, after a thousand Demonstrations, to believe that the Planets are so many Earths: But their Belief is not such as it would be, if they had not seen them under a different Appearance; they still remember the first Idea they entertained, and they cannot well recover themselves from it. It is these sort of People, who, in believing our Opinion, seem to do it a Courtesy, and only favour it for the Sake of a certain Pleasure which its Singularity gives them.

Well, *says the Countess*, interrupting me, and is not this enough for an Opinion, which is but barely probable? You would be very much surprized, *says I*, if I should tell you, *probable* is
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a very modest Term. Is it simply probable that such a one as *Alexander* ever was? You hold it very certain that there was, and upon what is this Certainty founded? Because you have all the Proofs which you could desire in a like Matter, and there does not the least Subject for Doubt present it self, to suspend or arrest your Determination; for else you never could see this *Alexander*, and you have not one *Mathematical* Demonstration that there ever was such a Man. Now what would you say if the Inhabitants of the Planets were almost in the very same Case? We cannot pretend to make you see them, and you cannot insist upon the Demonstration here, as you would in a *Mathematical* Question; but you have all the Proofs you could desire in a like Matter: The entire Resemblance of the *Planets* with the *Earth* which is inhabited, the Impossibility of conceiving any other Use for which they were created, the Fecundity, and Magnificence of Nature, the certain Re-
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gards she seems to have had to the Necessities of their Inhabitants, as in giving *Moons* to those *Planets* remote from the *Sun*, and more *Moons* still to those yet more remote; and what is still very material, there are all things to be said on this side, and nothing on the other; and you cannot comprehend the least Subject for a Doubt, unless you will take the Eyes and Understanding of the *Vulgar*. In short, supposing that these Inhabitants of the Planets really exist, they could not declare themselves by more Marks, or Marks more sensible; and after this you are to consider whether you are willing not to take their Case to be more than purely probable. But you would not have me, *replies the Countess*, look upon this to be as certain as that there was such a Man as *Alexander*? Not altogether, *Madam, says I*, for tho' we have as many Proofs touching the Inhabitants of the Planets, as we can have in the Situation we are, yet the Number of these Proofs is not great. I must re-

nounce these Planetary Inhabitants *said her Ladyship*, interrupting me, for I can't conceive how to rank them in my Imagination; there is no absolute Certainty of them, and yet there is more than a Probability; so that I am confounded in my Notions. Ah, Madam, *says I*, never put your self out of conceit with them for that; the most common and ordinary Clocks shew the Hours, but those are wrought with more Art and Nicety which shew the Minutes. Just so your ordinary Capacities are sensible of the Difference betwixt a simple Probability, and a compleat Certainty; but it is only your fine Spirits that discern the exact Proportions of Certainty or Probability, and can mark, if I may use the Phrase, the Minutes in their Sentiments. Now place the Inhabitants of the Planets a little below *Alexander*; but above, I can't tell how many Points of History which are not so clearly proved: I believe this Position will do well. I love Order, *says the Countess*, and you oblige me in ranging my

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my Ideas for me: But pray, why did not you take this Care before? Because, *says I*, should you believe the Inhabitants of the Planets either a little more or less than they deserve, there will be no great Damage in it. I am sure that you do not believe the Motion of the Earth so fully as it ought to be believed; and have you much Reason to complain on that Score? O! For that matter, *replies she*, I have discharged my self well; you have nothing to reproach me with on that Account, for I firmly believe that the Earth turns. And yet, *says I*, Madam, I have not given you the strongest Reasons in proving it. Ah! Traitor, *replies the Countess*, to make me believe things upon feeble Proofs: Then you did not think me worthy of believing upon substantial Reasons? I only proved things, *says I*, upon little plausible Reasons, and such as were adapted to your peculiar Use: Should I have conjured up as strong and solid Arguments, as if I had been to attack a Doctor in the Science? Yes,

says the Countess, pray take me for a Doctor from this Moment, and let me have your additional Demonstrations of the Earth's moving.

With all my Heart, *says I*, Madam, and I own the Proof pleases me strangely, perhaps because I think it was of my own finding; yet it is so good and natural, that I must not presume positively to have been the Inventor of it: It is most certain, that if a learned Man was puzzled, and desired to make Replications to it, he would be obliged to hold forth at large, which is the only Method in the World to confound a learned Man. We must grant, that all the *Celestial Bodies*, in four and twenty Hours, turn round the Earth, or that the Earth turning on it self, imparts this Motion to all the Celestial Bodies. But that they really have this Revolution in four and twenty Hours round the Earth, is a Matter which has the least Appearance in the World, tho' the Absurdity does not presently appear to our View. All the Planets certainly
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ly make their great Revolution about the Sun; but these Revolutions of theirs are unequal according to the Distances of the respective Planets from the Sun; for the most remote ones make their Course in a larger Time, which is most agreeable to Nature: The same Order is observed among the little secondary Planets in turning about a great one. The four Moons of *Jupiter*, and the five of *Saturn*, make their Circles in more or less Time round their great Planet, according as they are more or less remote. Besides, it is certain that the Planets have Motions upon their own Centers, and these Motions likewise are unequal; we cannot well tell how to account for this Inequality, whether it proceeds from the different Magnitudes of the Planets, or on the different Swiftmess of the particular Vortexes which inclose them, and the liquid Matters in which they are sustained; but, in short, the Inequality is most undoubted; and such is the Order of Nature in general, that whatever is

common to many things, is found at the same Time to vary in some different Particulars.

I understand you, *says the Countess*, interrupting me, and, I think, there's a great deal of Reason in what you say; I am entirely of your Mind, if the Planets turned about the Earth, they would do it in unequal Spaces of Time, according to their Distances, as they do about the Sun: Is not that the Meaning of what you were saying? Exactly, Madam, *says I*, their unequal Distances, with respect to the Earth, their different Magnitudes, and the different Rapidity of the particular Vortexes inclosing them, should consequently produce Differences in their pretended Motion round the Earth, as well as in all their other Motions. And the fixed Stars which are at such a prodigious Distance from us, and so much elevated above every thing that can take a general Motion round us, at least which are situated in a Place whence this Motion should be very much weakned,

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would there not be a very great Appearance that they did not turn at all about us in four and twenty Hours, as the Moon does who is so near us? And should not Comets, which are Strangers in our Vortex, and which run Courses so differing one from another, and with such unequal Rapidity, be excused from turning round us in the same Space of four and twenty Hours? But no Matter, fixed Stars, and Comets, and all must turn round the Earth in four and twenty Hours; yet, if there were some Minutes of Difference in these Motions, we might be contented; and they all must make them with the most exact Equality, or rather the only exact Equality which is in the World, and not one Minute more or less allowed. In Reality, this Matter is strangely to be suspected.

O! *says the Countess*, since 'tis possible that this grand Equality should be only in our Imagination, I'm entirely convinc'd it is deriv'd only from thence: I'm very well pleased, that any which is against the Genius of Nature, should

fall entirely upon our selves, and that she should stand discharged, tho' at our Expence. For my part, *says I*, I am such a Foe to a perfect Equality, that I cannot even allow, that, all the Turns which the Earth every Day makes on her self, should be precisely in four and twenty Hours, and always equal one to another; I should be very much inclined to think that there are Variations: Variations! *cried the Countess*, why, do not our Pendulums mark an entire Equality? O, *says I*, to your Pendulums I must object, for they cannot be altogether just; and sometimes when they are, in shewing us that one Circuit of twenty-four Hours, is longer or shorter than another, we should rather be inclined to believe them irregular, than to suspect the Earth of any Irregularity in her Revolutions. What a pleasant Respect is this we have for her, I would no more depend on the Earth than on a Pendulum! And the very same Casualties almost which will disorder the one, will make the other irregular! Only, I believe,

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believe, there must be some more Time allowed for the Earth, than a Pendulum, to be visibly put out of Order ; and that is all the Advantage we can give on her side. But might she not by Degrees draw nearer to the Sun ? And there finding her self in a Situation, where the Matter is more agitated, and the Motion more rapid, she will in less Time make her double Revolution both about the Sun and her self ; so consequently her Years and Days will be much shortned, but not to be perceiv'd, because we must still go on to divide the Years into three hundred and sixty five Days, and the Days into twenty four Hours : So that without living longer than we now do, we shall live more Years ; and on the other Hand, as the Earth shall withdraw from the Sun, we shall live fewer Years than we do now, and yet have our Lives of the same Extent. There is a great deal of Probability, *says the Countess*, that whenever it falls out so, long Successions of Ages will make but very little

Variation. I agree with you, Madam, *replied I*, the Conduct of Nature is very nice, and she has a Method of bringing about all Things by Degrees, which are not sensible, but in very obvious and easy Changes: We are scarce able to perceive the Change of the Seasons, and for some others which are made with a certain Deliberation, they do not fail to escape our Observance. However, all is in a perpetual Rotation, and not so much as the Lady's Face in the Moon, which was discovered with Telescopes, within this twenty Years, but what is grown considerably old. She had a good tolerable Countenance, but now her Cheeks are sunk, her Nose grown long, and her Chin and Forehead meet, so that all Graces are vanished, and Age has made her a terrible Spectacle.

What a Story do you tell, *says the Countess*, interrupting me? It is no Imposition, Madam, *replied I*, they have perceived in the Moon a particular Figure which had the Air of a Woman's Head jetting out of Rocks, and it

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is owing to some Changes that have happened there. Some Pieces of Mountains have mouldered away, and left us to discover three Points, which can only serve to make up the Forehead, Nose, and Chin, of an old Woman. Well, *says she*, but do not you think it is some Destiny that had a particular Spite to Beauty? And very justly it was this Female-Head, which she would attack above all the Moon. Perhaps in Recompence, *replied I*, the Changes which happen upon our Earth, dress out some Face, which the People in the Moon see; I mean something like what we conceive a Face in the Moon; for every one bestows on Objects those Ideas of which they themselves are full. Our Astronomers see on the Surface of the Moon, the Faces of Women, and may be, if the Ladies were to make their Speculations, they would discern the Physiognomy of fine Men. For my part, Madam, I don't know whether I should not fancy your Ladyship's Charms there. I protest, *says she*, I can't help being obliged

liged to any One who should find me there. But to come back to what you were mentioning just now: Do any considerable Changes affect the Earth? In all Appearance they do, *replied I*: Old Fables tell us, that *Hercules* split asunder with his Hands, the two Mountains, called *Calpe* and *Abila*, which stand betwixt *Africk* and *Spain*, stopped the Ocean from flowing there, and that immediately the Sea rushed with Violence over the Land, and made that great Gulph which we call the *Mediterranean*. Now this is not wholly fabulous, but a History of those remote Times, which has been disguised, either from the *Ignorance* of the *People*, or through the *Love* they had for the *Marvellous*, the two most antient Frailties of Mankind. That *Hercules* should separate two Mountains with his two Hands, is absolutely incredible; but that in the time of one *Hercules*, or other, for there were Fifty of that Name, the Ocean should force down two Mountains, not so strong as others in the World, perhaps thro'

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thro' the Assistance of some Earthquake, and so take his Course betwixt *Europe* and *Africk*, gives me no manner of Pain to believe. What a notable Spot might the *Lunar-Inhabitants* all on a sudden discover on our Earth; for you know, Madam, that Seas are Spots. It is no less the common Opinion, that *Sicily* was separated from *Italy*, and *Cyprus* from *Syria*: There are sometimes new Islands formed in the Seas: Earthquakes have swallowed up Mountains, others have rose and altered the Course of the Planets. The Philosophers give us Apprehensions, that the Kingdoms of *Naples* and *Sicily*, which are Countries laid upon great subterranean Vaults, full of Sulphur, will one day sink in, when those Vaults shall no longer be able to resist the Flames which they contain, and at this time exhale at those Vent-holes the Mouths of *Vesuvius* and *Ætna*. Is not here enough to diversify the Sight which we give to the People in the Moon?

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I had much rather, *says the Countess*, that we disgusted them with the same Object always, than diverted them with the swallowing up of Provinces.

I do not know, *replied I*, if within this little time there have not been several burnt up in *Jupiter*. What, Provinces burnt up in *Jupiter*! *cries the Countess*, upon my Word, that would be considerable News. Very considerable, *says I*, Madam: We have remarked this Year in *Jupiter* a long Trail of Light, more glaring than the rest of that Planet's Body. We have, here, had Deluges, perhaps they may have suffered great Conflagrations in *Jupiter*: How do we know to the contrary? *Jupiter* is Ninety Times bigger than the Earth, and turns on his one Center in Ten Hours, whereas we do not turn in less than four and twenty, which implies that his Motion is two hundred and sixteen times stronger than ours. May it not be possible, that in so rapid a Circulation, its most dry and combustible Parts should take fire as we see
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the Axle-trees in Wheels, from the Rapidity of their Motion, will break out into Flames? But however it is, this Light of *Jupiter* is by no means comparable to another, which in all Probability is as Ancient as the World, and yet we have never seen it. How does a Light order it to be concealed, *says the Countess*? There must be some singular Address to compass that Point.

This Light, *replied I*, never appears but at Twilight, which is often strong enough to drown it; and even when Twilight suffers it to appear, either the Vapours of the Horizon rob us of it, or it is so very faint and hard to be perceived, that for want of Exactness in our Knowledge, we mistake it for the Twilight. But, in short, they have of late Years with much Certainty distinguished it; and it has been for some Time the Delight of the Astronomers, whose Curiosity wanted to be roused by some Novelty, and they could not well have been more touched, if they had discovered some new secondary

nary Planets. The two latter Moons of *Saturn*, for Instance, did not ravish them to that Degree which the Guards or Moons of *Jupiter* did: But now we are fully accustomed to it; we see, one Month before, and after, the Vernal Equinoctial, when the Sun is set and the Twilight over, a certain whitish Light resembling the Tail of a Comet. We see the same before Sun rise, and before the Twilight, towards the Autumnal Equinoctial; and towards the Winter Solstice we see it Night and Morning, except at these Times it cannot, as I but now observed, disengage it self from the Twilights, which are too strong and lasting; for we suppose it to be a continued Light, and in all Probability it is so. We have begun to conjecture that it is produced from some prodigious Quantity of Matter crowded together, which circles round the Sun to a certain Extent: The greatest Part of his Rays pierce thro' this gross Circuit, and come down to us in a right Line; but some resting on the inner Surface of this

this Matter, are from thence reflected to us, and come with the direct Rays, or else we cannot have them either Morning or Evening. Now as these reflected Rays are shot from a greater Height than those which are direct, we must consequently have them sooner, and keep them longer.

On this foot, I must acquiesce in what I have already mentioned, that the *Moon* must have no Twilight for want of being surrounded by such a gross Air as the *Earth*. But she can be no loser; her Twilights will proceed from that kind of gross Air which surrounds the *Sun*, and reflects his Rays on Places which his direct ones cannot reach. But pray let me know, *says the Countess*, are not there Twilights settled for all the Planets, who will not need every one to be cloathed with a distinct gross Air, because that which surrounds the Sun alone, may have one general Effect for all the Planets in the Vortex? I am mighty willing to think that Nature, agreeable to that Inclination

tion which I know she has to Oeconomy, and good Management, should make that single Means answer her purpose : Yet, *replied I*, notwithstanding that supposed Oeconomy, she must have, with respect to our Earth, two Causes for Twilight ; one whereof, which is the thick Air about the Sun, will be pretty useless, and can only be an Object of Curiosity for the Students of the Royal Academy : But not to conceal any thing, it is possible that only the Earth sends out from her self Vapours and Exhalations gross enough to produce Twilights, and that Nature had Reason to provide by one general Means for the Necessities of all the other Planets, which are, if I may so say, of a purer Mould, and their Evaporations consequently more subtle. We are perhaps those among all the Inhabitants of the Worlds in our Vortex, who required to have a more gross and thick Air given us to breathe in. With what Contempt would the Inhabitants of the other Planets consider us, if they knew this?

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They would be out in their Reasoning, *says the Countess*, we are not to be despised for being enveloped with a thick Air, since the Sun himself is so surrounded. Pray tell me, is not this Air produced by certain Vapours, which you have formerly told me issued from the Sun, and does it not serve to break the first force of his Rays, which had else probably been to Excess? I conceive that the Sun may be veiled by Nature, to be more proportioned to our use. Well, Madam, *replied I*, this is some small *Introduction* to a *System* which you have started very happily. We may add, that these Vapours may produce a kind of Rain, which falling back upon the Sun may cool and refresh it, as we sometimes throw Water into a Forge, when the Fire is too fierce. There is nothing which we may not presume, to help out Nature's Address, but she has another kind of Address very particular, which is to conceal her self from us, and we should not willingly be confident that we have found out her Method of acting

ing on her Designs in it: In case of New Discoveries, we should not be too importunate in our Reasonings, tho' we are always fond enough to do it; and your true Philosophers are like Elephants, who as they go, never put their second Foot to the Ground, till their first be well fixed. The Comparison seems the more just to me, *says she*, as the Merit of those two Species of Animals, Elephants and Philosophers, does not at all consist in Exterior Agreements. I am willing to mistake the Judgment of both; now teach me some of the latter Discoveries, and I promise you not to make any rash Systems.

I'll tell you, Madam, *replied I*, all the News I know from the Firmament, and I believe the freshest Advices you can have. I am sorry they are not as surprizing and wonderful, as some Observations which I read the other Day in an Abridgment of the *Chinese Annals*, written in *Latin*, and published lately. They see a thousand Stars at a Time, which fall from the Sky into the

the Sea with a prodigious Noise, or are dissolved, and melt into Rains; and these are Things which have been seen more than once in *China*. I met with this Observation at two several Times pretty distant from each other, without reckoning a certain Star which goes *Eastward*, and bursts like a Squib, always with a great Noise. It is great Pity that these sort of *Phenominons* should be reserved for *China*, and that our part of the Globe should never have their Share of these Sights. It is not long since our Philosophers thought they might affirm on good Grounds, that the *Heavens* and all the *Celestial Bodies* were incorruptible, and therefore incapable of Change; and yet at the same time, there were other Men in the other part of the Earth who saw Stars dissolve by Thousands, which must produce a very different Opinion. But, *says the Countess*, did we ever hear it allowed that the *Chinese* were such great Astronomers? 'Tis true, we did not, *says I*, but the *Chinese* have an Advantage from being

being divided from us by such a prodigious Tract of Earth, as the *Greeks* had over the *Romans* by being so much Prior in Time: Distances of every sort pretend a Right of imposing on us. In Reality, I think still more and more, that there is a certain Genius which has never yet been out of the Limits of *Europe*, or at least not much beyond them; perhaps he may not be permitted to spread over any great Extent of the Earth at once, and that some Fatality prescribes him very narrow Bounds. Let us indulge him whilst we have him; the best of it is, he is not linkt to the Sciences and dry Speculations, but launches out with as much Success into Subjects of Pleasure, in which Point I question whether any People equal us. These are such Topicks, Madam, as ought to give you Entertainment, and make up your whole *System* of *Philosophy*.

and I will not bid you, that I have an Advantage from being

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AN
ORATION,
IN
DEFENSE
OF THE

New PHILOSOPHY.

Pronounced in the Theatre at Ox-
ford, July 7th, 1693. Translated
from the *Latin* Original.



HOW long, Gentlemen of the
University, shall we slavishly
tread in the Steps of the An-
tients, and be afraid of being
wiser than our Ancestors? How long
K shall

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shall we religiously worship the Triflings of Antiquity, as some do old Wives Stories? It is indeed shameful, when we survey the *great Ornament* of the present Age *, to transfer our Applauses to the Antients, and to take Pains to search into Ages past for Persons fit for Panegyrick.

The antient Philosophy has had more allowed than it could reasonably pretend to, how often has SHELDON'S Theatre rung with *Encomia* on the *Stagyrite*, who, greater than his own *Alexander*, has long, un-opposed, triumphed in our School-Desks, and had the whole World for his Pupils. At length rose CARTESIUS, a happier Genius, who has bravely asserted the Truth against the united Force of all Opposers, and has brought on the Stage a new Method of philosophizing. But shall we stigmatize with the Name of Novelty that Philosophy,

* SIR ISAAC NEWTON.

which,

which, tho' but lately revived, is more
antient than the *Peripatetick*, and as
old as the Matter from whence it is
derived. A great Man indeed He was,
and the only one we envy FRANCE *.
He solved the Difficulties of the U-
niverse almost as well as if he had
been its Architect. He destroyed
those Orbs of Glass, which the Whims
of Antiquity had fixed above, brought
to light that Troop of Forms till
then unknown, and has almost ex-
tinguished the Element of Fire, nay,
he with so much Clearness traced
out the whole Mass of Matter, as
to leave no occult Quality untouched.
This Philosopher scorned to be any
longer bounded within the Straights
and Chrystalline Walls of an *Aristotelick*
World; no, his Delight is to search
the Regions above, to discover new
Suns, and new Worlds, which lay
hid amongst the Stars; his Satisfaction

* DES-CARTES.

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is to view that large Kingdom of Air amidst the unfixed Stars, and Lands that pass the milky Way, and more accurately measure this vast Machine, a Machine fit for Mankind to philosophize on, and worthy of the Deity, that first framed it.

Here we have not only new Heavens opened to us, but we look down on our Earth; this Philosophy affords us several Kinds of Animals; where, by the Help of Microscopes, our Eyes are so far assisted, that we may discern the Productions of the smallest Creatures, while we consider with a curious Eye the animated Particles of Matter, and behold with Astonishment, the reptile Mountains of living Atoms. Thus are our Eyes become more penetrating by modern Helps, and even that Work which Nature boasts for her Master-Piece, is rendred more correct and finished. We no longer pay a blind Veneration to that barbarous *Peripatetick*-Jingle, those obscure Scholastick Terms of Art, once held

held as Oracles, but consult the Dictates of our own Senses, and by late invented Engines force Nature herself to discover plainly her most valued Secrets, her most hidden Recesses.

By the Help of Instruments like these, that Air, which a bountiful Nature has indulged us, we as often as we please by the Force of Art, abridge other Animals of, and keep them in our Pneumatick Pumps, from its common Benefit: What a Pleasure is it to see the fruitless Heavings of the Lights, to exhaust their Lives, and by a most artful Sort of Theft rob them of their Breath? From this nothing is safe, nothing so long lived, which gradually does not languish, and fall dead without a Wound. A divine Piece of Art this, and worthy its Author *, who in the Conduct of his Life, and the Force of his Arguments, has so nobly honoured our Nation, and the new

* The Honourable ROBERT BOYLE Esq;
Philo-

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Philosophy, one who for this Reason too deserves never to want the Benefit of his own Air, or that he, who has so often deprived other Animals of their Life, should ever breathe out his own.

On no such Grounds as these has ARISTOTLE built his Philosophy, who from his own Brain furnished out all his Rules of Arts and Sciences, and left nothing untouched on, nothing unregarded but *Truth*. If therefore he precipitated himself into the River *Euripus*, because he could not understand its Ebb and Flow, by the same Logick he might at his first Entrance on Philosophy have destroyed himself, and we may fairly doubt, in which of the Elements he ought to have perished.

After ARISTOTLE'S Fate amidst the Waves of *Euripus*, a new Race of *Peripateticks* started up, even worse than their Founder, who handed their Philosophy to after Ages in so thick an Obscurity, that it has preserved it from the Satire and Ridicule of all Mankind, as understood by very few. Some there

there are to be found, who spend their Time amidst the Rubbish which these Commentators have filled the World with, and pore more than once on these god-like Treasures of Learning, and stick to them to no other Purpose, unless to shew the World the vast Pains they take to be deceived. Can there be a more pleasant Sight than to see these wise Champions wrangling with each other? The one, armed with Propositions and Syllogism, attacks his Antagonist in the same Armour: Both bell-weatheres grow angry, and storm, fond of a Victory, which is worth but a Trifle, when obtained: Each, with all his Might darts out his Barbarisms at the other, they entangle themselves in their Follies, and as neither knows how to extricate himself, they sound to a Retreat, and when all the Ammunition is spent on both Sides, they think fit to keep Silence.

Thus far, Gentlemen, and no farther launches out the antient Philosophy: Let us therefore sentence for ever this
Troop

200 *Mr. ADDISON's Oration.*

Troop of Commentators, to be tied up
in Chains and Libraries, Food only
for Moths and Worms, and there let
them quietly grow Old, free from the
Sight of any Reader.

Joseph Addison.



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